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Bumblebee Program - Aerodynamic Data

Part III - Pressure Fields at
Mach Numbers 1.5 and 2.0

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G. A. Barnes and L. L. Cronvich

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Bumblebee Program - Aerodynamic Data

Part III - Pressure Fields at Mach Numbers 1.5 and 2.0

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SUMMARY

This report provides data that supplements the $M = 2.0$ flow field data given in Part II. The enclosed data package (Appendix A) describes the Mach number effect by means of pressure fields only, at $M = 1.5$ and 2.0 , and at angles of attack up to 23° at a mid-body station where a wing might be located. It was necessary to use the mid-body station for a Mach number comparison since there are no data available from the Bumblebee Program at a Mach number other than 2.0 corresponding to the flow survey station of Part II where a tail surface might be located.

INTRODUCTION

The flow field data given in Part II were compiled for the purpose of aiding the theoretician in his efforts to develop and verify computational methods for defining the complex flow field around missile bodies at relatively high angles of attack. The data of Part II are for $M = 2.0$ and define the flow field around a conical-nosed cylindrical body in a cross-flow plane that is a likely location for the tail surface of a missile.

The purpose of this Part III report is to provide additional data that can be used to define the Mach number effect ($M = 1.5$ and 2.0) on flow field characteristics around a missile body at relatively high angles of attack (to $\alpha = 23^\circ$).

This report is the third in a four-part series published under the general title:

"Bumblebee Program - Aerodynamic Data"

Part I discusses the purpose of this effort and how the information in the other three reports is related.

Part II presents data at $M = 2.0$ which define the flow field around a conical-nosed, cylindrical missile body in a crossflow plane corresponding to a likely tail location.

Part IV presents wing panel normal force and center of pressure data for three rectangular wings of varying aspect ratio (span) at Mach numbers of 1.5 and 2.0 .

NOMENCLATURE FOR TABULATED DATA OF APPENDIX A

$p_{t,o}$ or PTO	free stream stagnation (total) pressure	(in.Hg abs)
p_x	static or pitot pressure (see Fig. 2) taps 1-6, static; taps 7-15, pitot	(in.Hg abs.)
$p_x/p_{t,o}$	ratio of a probe pressure (static, p_s , or pitot, p_t') to free stream total pressure	
$\Delta p/q$	ratio of difference between local static and free stream static pressures to free stream dynamic pressure	
ϕ or ϕ_R	roll attitude of body or rake system; positive is clockwise looking upstream (see Fig. 3 for definition of ϕ or $\phi_R = 0$)	(degrees)
θ	location angle for y or a pitot rake; counterclockwise is positive looking up- stream (see Figs. 3 and 4 for definition of $\theta = 0$)	(degrees)
α_i	indicated angle of attack in the vertical plane referred to tunnel centerline; nose up is positive	(degrees)
α_c	α_i corrected for support deflection	(degrees)
y	radial distance from body surface	(inches)

DISCUSSION

Source of Data

The flow field data of Part II provided a complete description of local static and total pressure distributions, local Mach number, and local flow inclination for angles of attack up to 23° at station (3) of the model described in Fig. 1. The $M = 2.0$ flow field tests (OAL 289-19)* provide data at station (3) for the B_5 body (termed B_{14} in the wind tunnel test report and in Part II) both alone and in combination with the W_4 wing, and at station (2) for the B_5 body alone as described in Fig. 1. As noted in Part II, the complete flow field tests were conducted at $M = 2.0$ only.

To describe the Mach number effect, it will be necessary to draw from other tests conducted as part of the overall Generalized Missile Study (GMS) of the Bumblebee Program. During these tests (OAL 289-7, -8, -10, -11, -12)* a limited number of static and pitot pressure data were obtained at $M = 1.5$ and 2.0 at station (2) (Fig. 1) for the B_5 body alone. This station approximates the leading edge of the W_4 wing employed in $M = 2.0$ flow field tests. These static and pitot pressure data and corresponding data from the OAL 289-19 flow field test at $M = 2.0$ have been reproduced and are presented as Appendix A. ~~The page numbering is identical to that of the OAL reports.~~

A sketch of the model configuration, locations of the pressure taps on the rake, parameters used to define rake location, and the region of pressure coverage are shown in Figs. 1-4.

* The Ordnance Aerophysics Laboratory (OAL) wind tunnel tests from which the Part II and Part III data were obtained are:

1. Description of Complete Flow Field (Part II)

OAL Report 289-14, -18, -19, "Survey of the Flow Field Around a Generalized-Missile Model at Mach 2.00," 19 April 1956.

2. Pressure Only (Part III)

OAL Reports 289-7, -8, -10, -11, -12, "Investigation of Induced Roll and Longitudinal Stability Characteristics of a Generalized Missile Model at Mach Numbers of 1.5 and 2.0," 5 and 16 August 1955.

General Comments

Some notes concerning the interpretation of the tabulated pressure data in Appendix A follow.

- Pressures were measured in a plane normal to the body centerline at station (2) on the B₅ body (Fig. 1).
- Data that are not applicable for the purposes of this report have been crossed out.
- The maximum error in the measured pressure coefficients is quoted in OAL wind tunnel data reports as:

$$\Delta p/q = \pm 0.0058$$

$$p_x/p_{t_o} = \pm 0.0025$$

- Certain data sheets for the OAL 289-19, M = 2.0 test are believed to be in error. For the Rake 5 data listings:

$$y = 1.269, 1.469, 1.669, 1.869$$

should read

$$y = 1.069, 1.269, 1.469, 1.669$$

This correction has been made on the data sheets.

- The number 3 static pressure tap (see Fig. 2) for the OAL 289-7, -8, -10, M = 2.0 tests was found to be bad after the test data were published; hence, data listed for this tap should be disregarded. Data have been crossed out where necessary on the data sheets.
- A general statement is made in the OAL wind tunnel test reports that at high α on the leeward side of the body, some vibration of the pressure probes occurred. This statement implies that the data user should exercise discretion when interpreting data in these areas.
- Table I has been compiled as a data availability matrix for the pressure-only tests (OAL 289-7, -8, -10, -11, -12). The asterisk denotes where more than one run was made for the noted conditions.

As can be seen the matrix is nearly complete at $M = 2.0$ but not as complete at $M = 1.5$. However, coverage is complete at $\alpha = 20^\circ$ and 23° at $M = 1.5$.

For the OAL 289-19, $M = 2.0$ test, the coverage was as follows:

$$\alpha_i = 0^\circ, 4^\circ, 8^\circ, 12^\circ, 16^\circ, 20^\circ \text{ and } 23^\circ$$

$$\phi_R = \begin{cases} 30^\circ, 15^\circ, 0^\circ, -15^\circ, -30^\circ \\ -40^\circ \text{ through } -135^\circ \text{ in } 5^\circ \text{ increments} \\ \text{and } -150^\circ \end{cases}$$

Data were obtained at each α for all values of ϕ_R .

Refer to Figs. 3 and 4 for a graphic description of location parameters and the region in which data were obtained.

It should be noted that all data given in Appendix A are presented as a function of wind tunnel indicated (or uncorrected) angle of attack, α_i . Corrected values of angle of attack, α_c , which include the effect of model support system deflection are given in the following table. These corrected values were obtained from the Stability and Control portions of Generalized Missile Study wind tunnel tests.

α_i (degrees)	α_c (degrees)		
	B_5 $M = 1.5$	B_5 $M = 2.0$	$B_5 W_4$ $M = 2.0$
4	4.1	4.12	4.3
8	8.2	8.28	8.65
12	12.3	12.53	13.05
16	16.6	16.85	17.45
20	20.9	21.17	21.86
23	24.1	24.42	25.21

Examples

In order to assist the user of the data given in Appendix A, the following examples are given.

The following discussion will be concerned with pitot pressure data only since there are considerably more experimental data points giving pitot pressure than giving the static pressure. Also, it is the pitot pressure that would generally be more descriptive in helping to define the character of the flow field.

Since there are pressure data available from two different tests (see Figs. 3 and 4) at $M = 2$, the first example will be a comparison of these data.

Shown in Fig. 5 for $\alpha_1 = 20^\circ$ is p'_t/p_{t0} versus distance from the body centerline ($y + 0.685$ in.) for $\theta = 90^\circ$, 120° , and 150° which, as noted in Fig. 4, is an area where data were obtained with three different pitot pressure rakes. The curves drawn through these points represent an average value of p'_t/p_{t0} at any given distance from the body centerline. This single curve representation of the data is probably a good one except possibly in regions of extreme flow activity such as shown in Fig. 5(c), $\theta = 150^\circ$, which, as will be noted subsequently, is in the area of a body vortex.

To exemplify where the plotted data points are given in the tabulated data of Appendix A, refer to Fig. 5(b), $\theta = 120^\circ$, and Figs. 3 and 4.

1. Pressure only test, OAL 289-7.

The checked data set for $\phi = -30^\circ$ on page ~~550~~ ^{85 see errata} gives the circles plotted on Fig. 5(b). Taps 7 through 15 apply and p_x stands for p'_t .

2. Flow Field test, OAL 289-19.

Rake 1, $\phi_R = 0^\circ$ - The checked data sets on pages ~~233~~ ¹³⁴ and ~~256~~ ¹³⁸ ^{see errata} are plotted as the flagged squares in Fig. 5(b).

¹⁶¹ Rake 5, $\phi_R = -120^\circ$ - The checked data sets on pages ~~328~~ ¹⁵³, ~~351~~ ¹⁵⁷, ^{see errata} and ~~374~~ are plotted as the squares in Fig. 5(b). Note that, although data are given to values of $y = 3.469$, data were not plotted beyond $y = 2.069$

since that is the extent to which data were available from the pressure-only tests.

The variation of p'_t/p_{t_o} with Mach number ($M = 1.5$ and 2.0) at $\alpha_i = 20^\circ$ is exemplified in Fig. 6. The pressure-only tests were used for this comparison.

A typical windward variation is given in Fig. 6(a) for $\theta = 30^\circ$. As might be expected, the variation of p'_t/p_{t_o} with distance from the body is nearly constant.

A typical leeward variation of p'_t/p_{t_o} at $\theta = 150^\circ$ is given in Fig. 6(b).

An example of how these pitot pressure data can be used to aid in defining the flow field about the body is given by a comparison of Figs. 5(c), 6(b), and Fig. 7 which made use of Fig. 24 from Ref. 1.

A $\theta = 150^\circ$ line and lines of constant distance from the body centerline have been drawn on the total pressure ratio contour of Fig. 7. Note that $H_1/H_o = p_{t1}/p_{t_o}$ or local total pressure ratio and not pitot pressure ratio. Refer now to Fig. 5(c) and note that the minimum pitot pressure occurs at a distance of 1.2 inches from the body centerline or as a multiple of the body radius (0.685 inches) at a value of approximately 1.75. Although $\theta = 150^\circ$ is not the exact circumferential location of the body vortex, it can be seen that the radial location is approximately 1.75 body radii from the centerline of the body. The data in Fig. 6(b) indicate that the body vortex at $M = 1.5$, $\alpha_i = 20^\circ$ may be in the same approximate position as at $M = 2.0$. Additional p'_t/p_{t_o} plots would be required to determine an exact location.

CONCLUDING REMARKS

In summary, this report provides data (specifically pitot pressure ratios) to describe the effect of Mach number ($M = 1.5$ and 2.0) on the flow field about a body at a mid-body longitudinal station. The existence of significantly reduced pressure regions on the leeward side of a body at high angles of attack (to $\alpha = 23^\circ$) where a wing may be positioned at certain roll orientations is readily discernible.

REFERENCE

1. APL/JHU CM-867, "Investigation of Normal-Force Distributions and Wake Vortex Characteristics of Bodies of Revolution at Supersonic Speeds," J. F. Mello, McDonnell Aircraft Corporation, 2 April 1956.

TABLE I
Data Availability Matrix
M = 1.5 and 2.0
(OAL 289-7, -8, -10, -11, -12)

M = 1.5

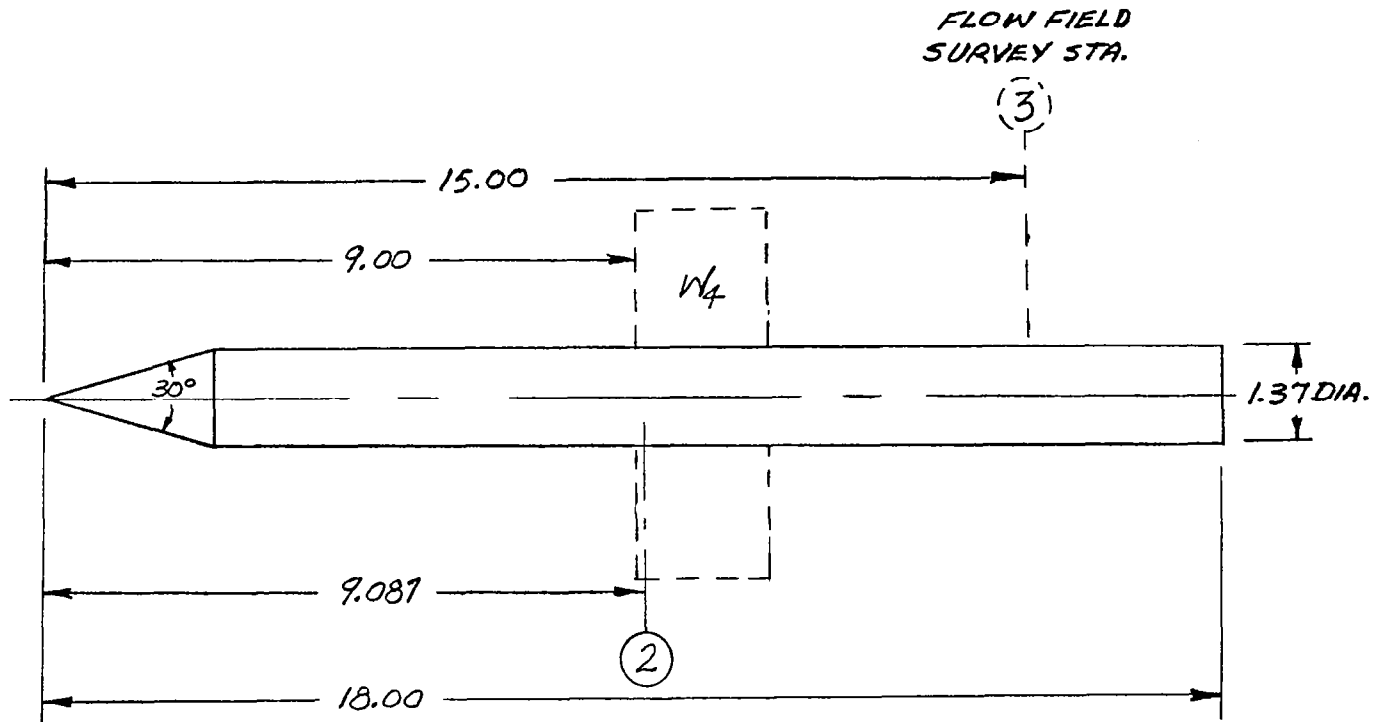
$\alpha_i^\circ \backslash \phi^\circ$	90	75	60	45	30	15	0	-15	-30	-35	-40	-45	-50	-55	-60	-65	-70	-75	-80	-90	-105	-120	-135	-150	-165	-180
0							X													X						X
4	X	X	X							X	X		X	X		X	X		X					X	X	X
8	X	X	X							X	X		X	X		X	X		X					X	X	X
12	X	X	X							X	X		X	X		X	X		X					X	X	X
16	X	X	X							X	X		X	X		X	X		X					X	X	X
20	X	X	X	X	X	X	X	X*	X*	X*	X*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
23	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

M = 2.0

$\alpha_i^\circ \backslash \phi^\circ$	90	75	60	45	30	15	0	-15	-30	-35	-40	-45	-50	-55	-60	-65	-70	-75	-80	-90	-105	-120	-135	-150	-165	-180
0	X	X	X	X*	X	X	X*	X	X			X*			X					X*	X*	X*	X*			
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X*	X	X			X	X	X	X	X	X	X
8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X*	X	X			X	X	X	X	X	X	X
12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X*	X	X			X*	X*	X*	X*	X	X	X
16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X*	X	X			X	X	X	X	X	X	X
20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X*	X	X			X	X	X	X	X	X	X
23	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X*	X	X	X		X	X	X	X	X	X	X

* More than one run

PRESSURE SURVEY MODEL

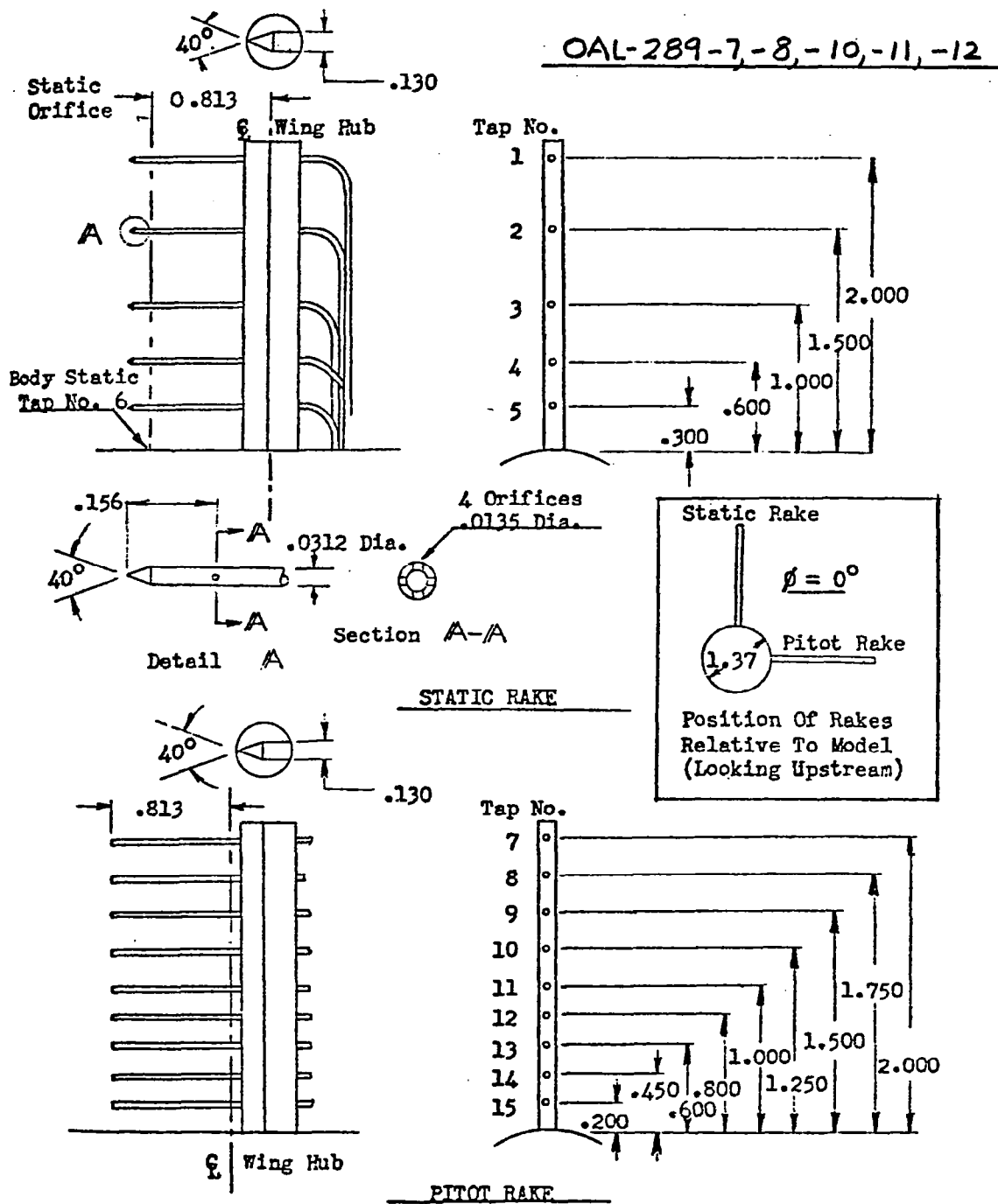


B₅P

NOTES:

1. STA. (2) - LOCATION OF PRESSURE ORIFICES.
2. DIMENSIONS IN INCHES.

FIG. 1

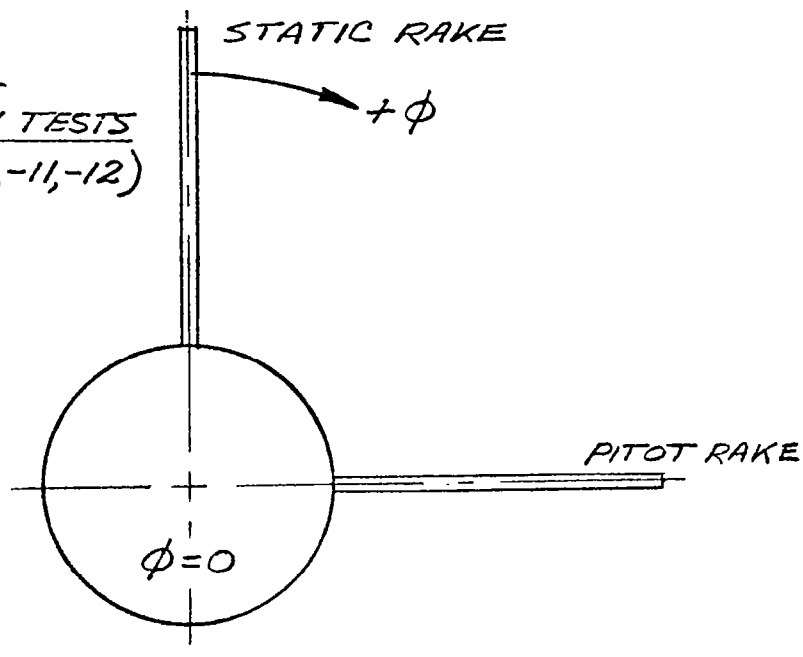


GENERALIZED MISSILE PRESSURE RAKES

FIG.2

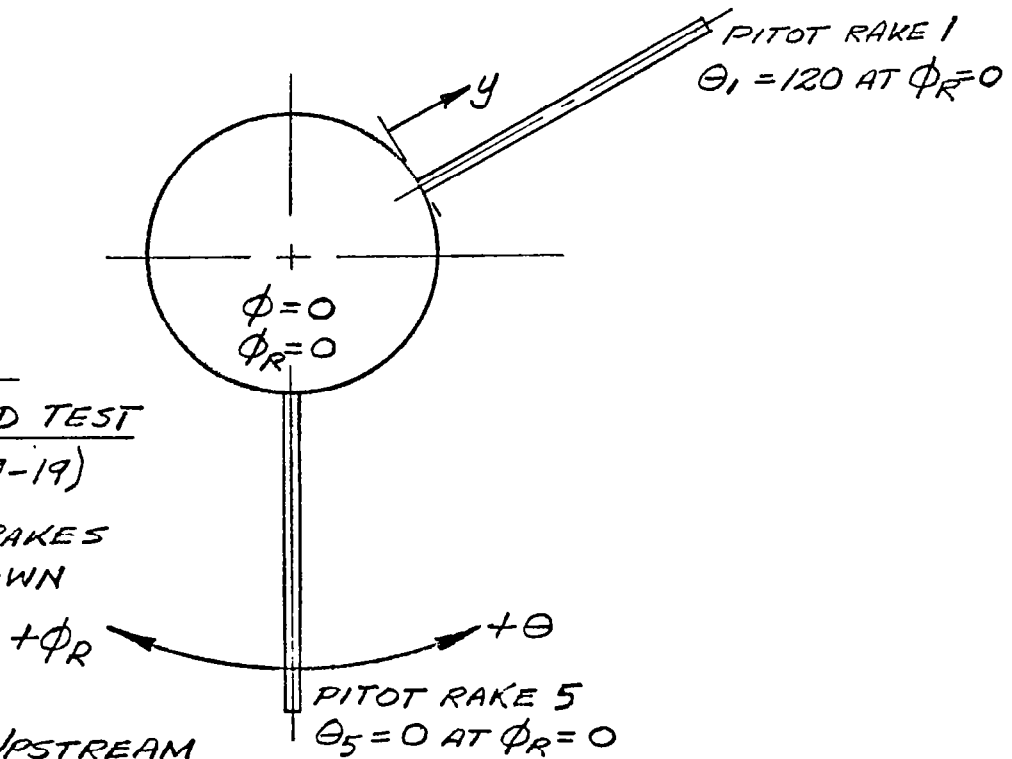
PRESSURE RAKE ORIENTATION

$M=1.5 \pm 2.0$
PRESSURE ONLY TESTS
 (OAL-289-7,-8-10,-11,-12)



$M=2.0$
FLOW FIELD TEST
 (OAL-289-19)

CONE STATIC RAKES
 NOT SHOWN



LOOKING UPSTREAM

FIG. 3

REGION OF PITOT PRESSURE COVERAGE

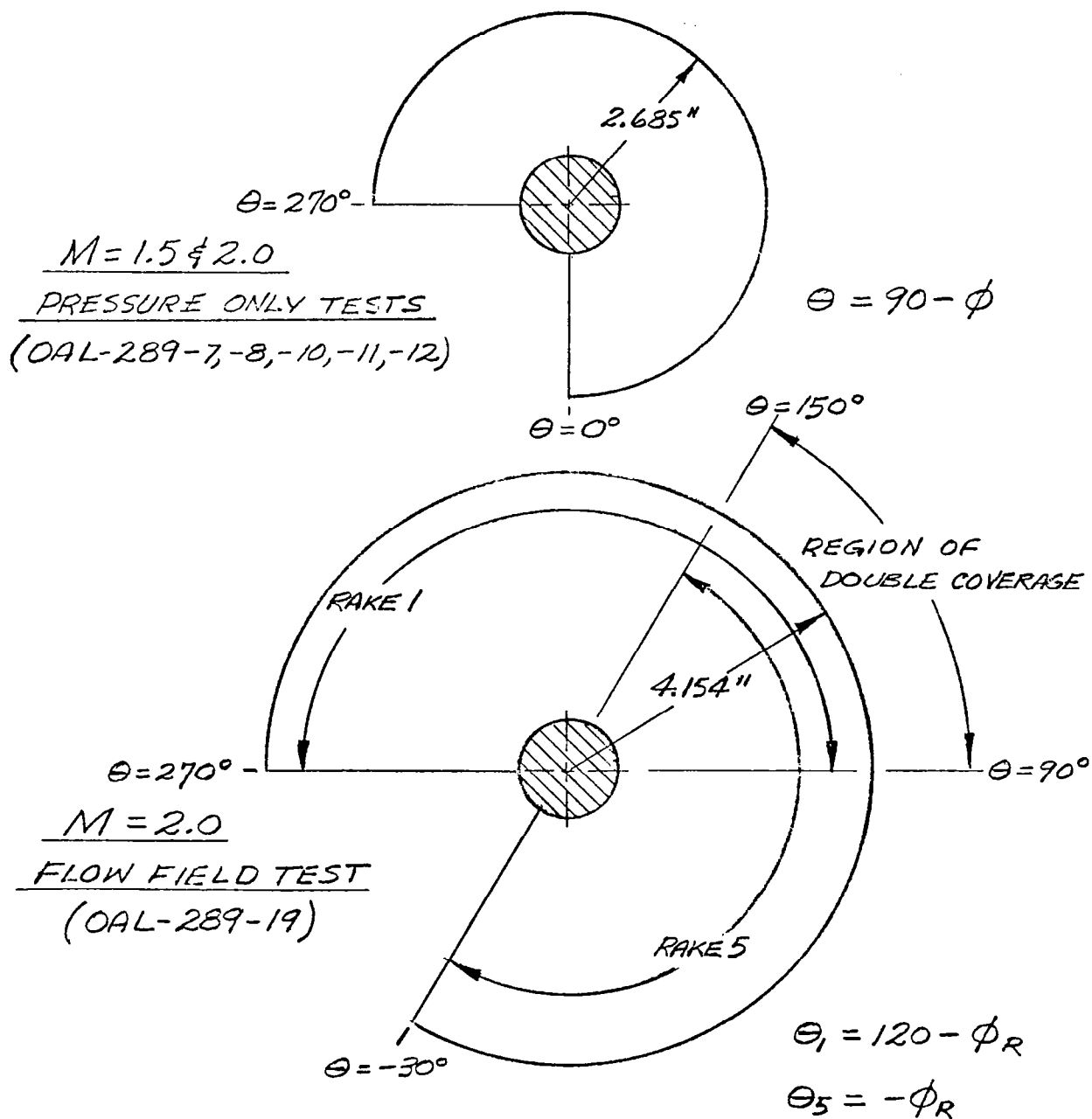


FIG. 4

PITOT PRESSURE RATIO

$$M=2.0, \alpha_i = 20^\circ$$

- - PRESSURE ONLY TEST
- - RAKE 5 } FLOW FIELD TEST
- - RAKE 1 }

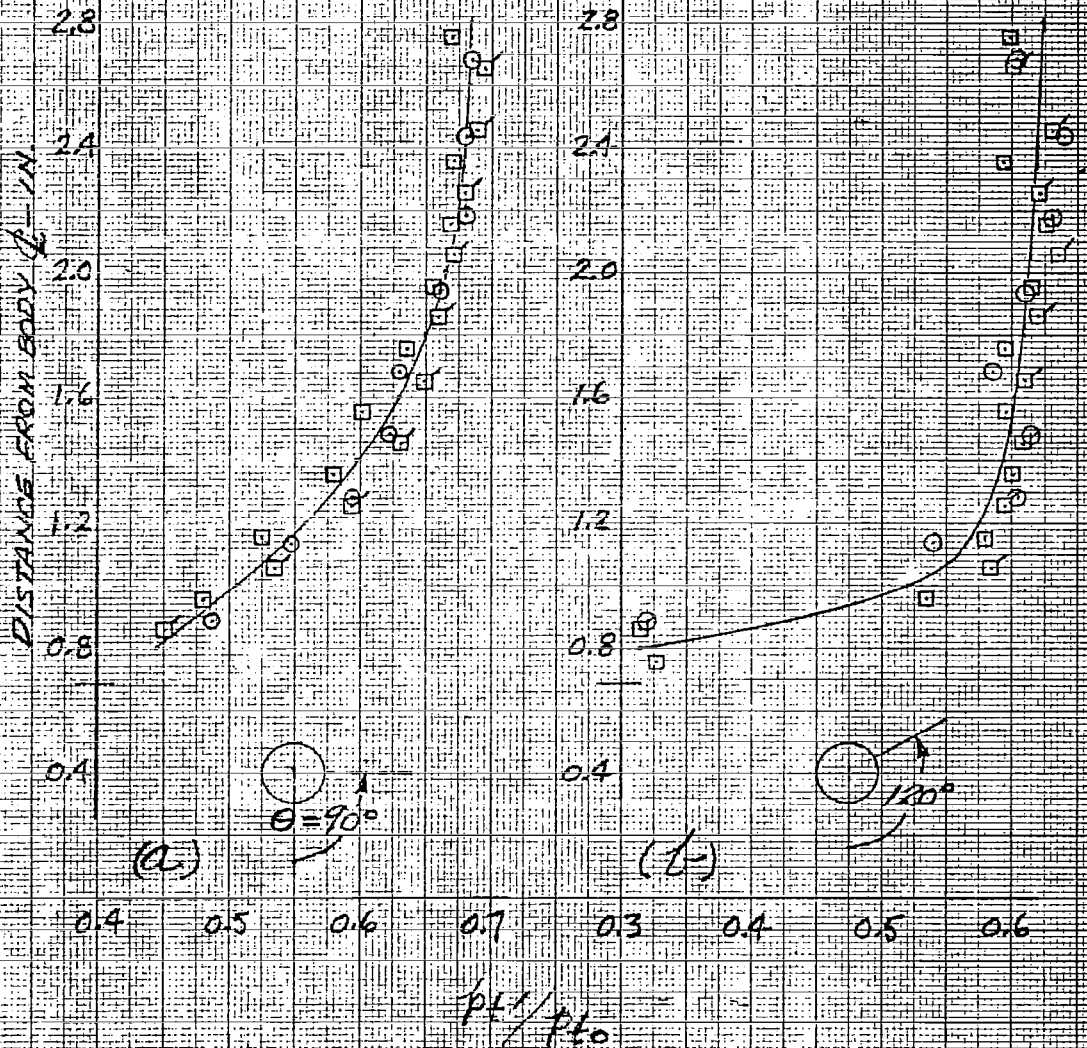
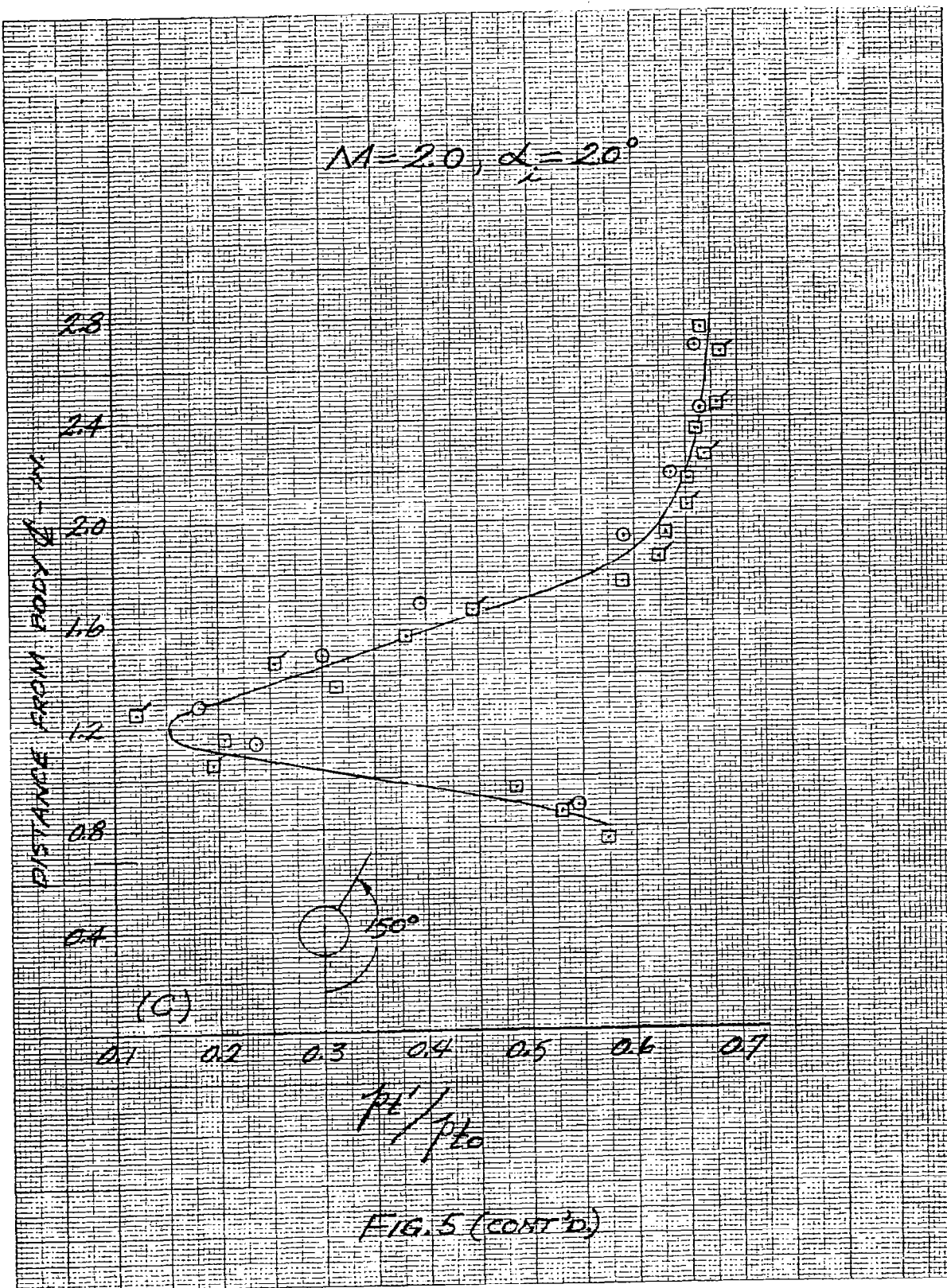


FIG. 5



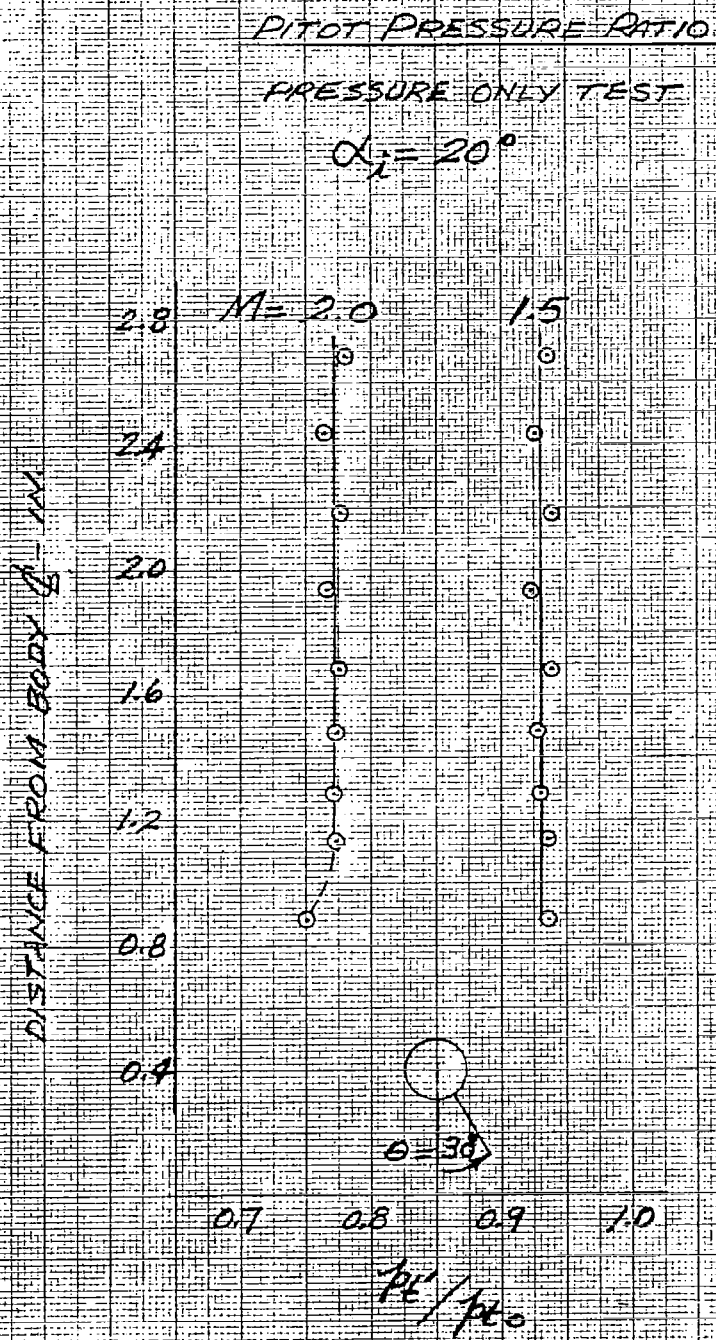
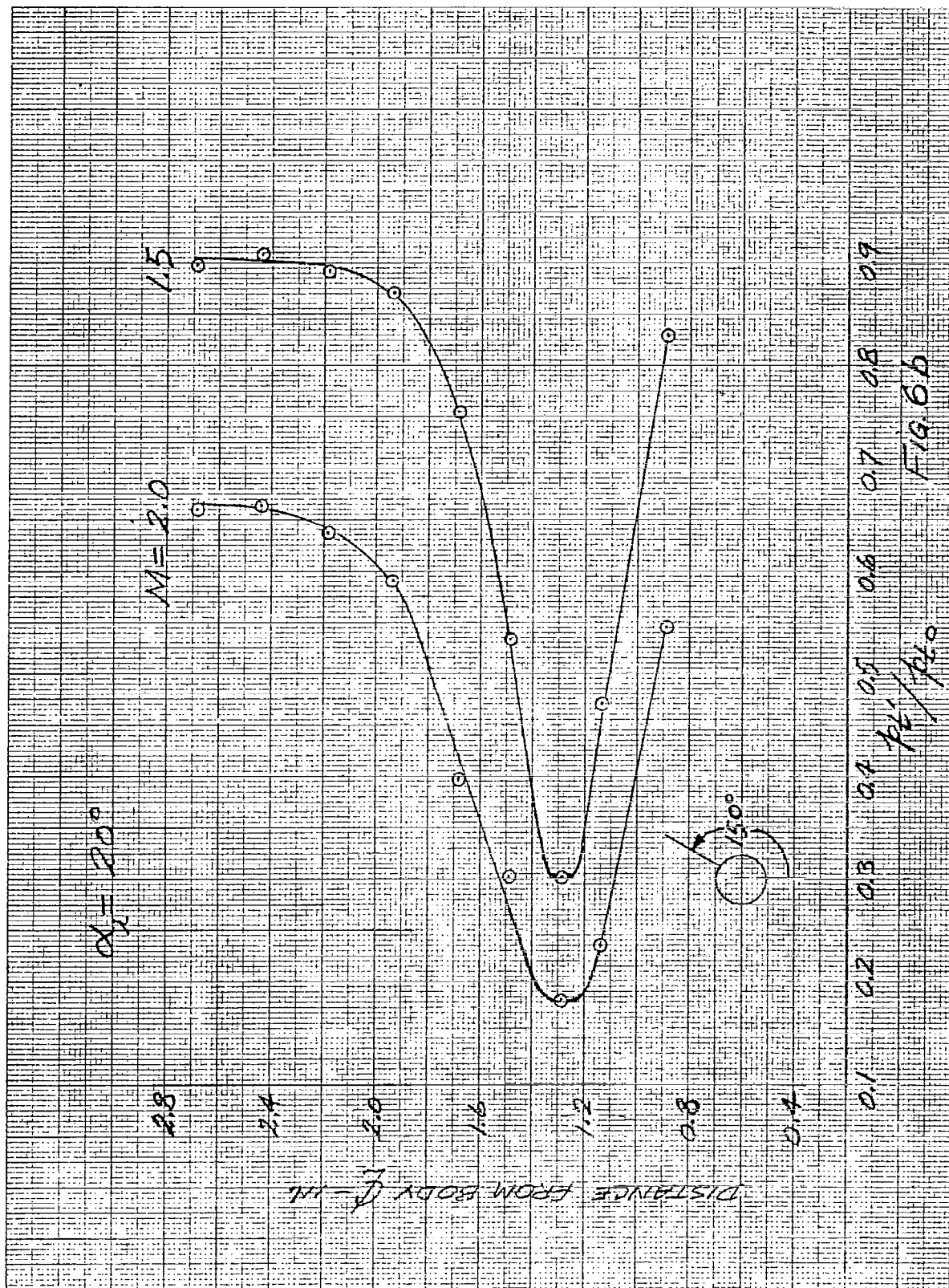


FIG. 6a



EXPERIMENTAL TOTAL PRESSURE RATIO CONTOURS AND LOCAL FLOW INCLINATION

$M_\infty = 2.00$

$\alpha_B = 20^\circ$

STATION 2

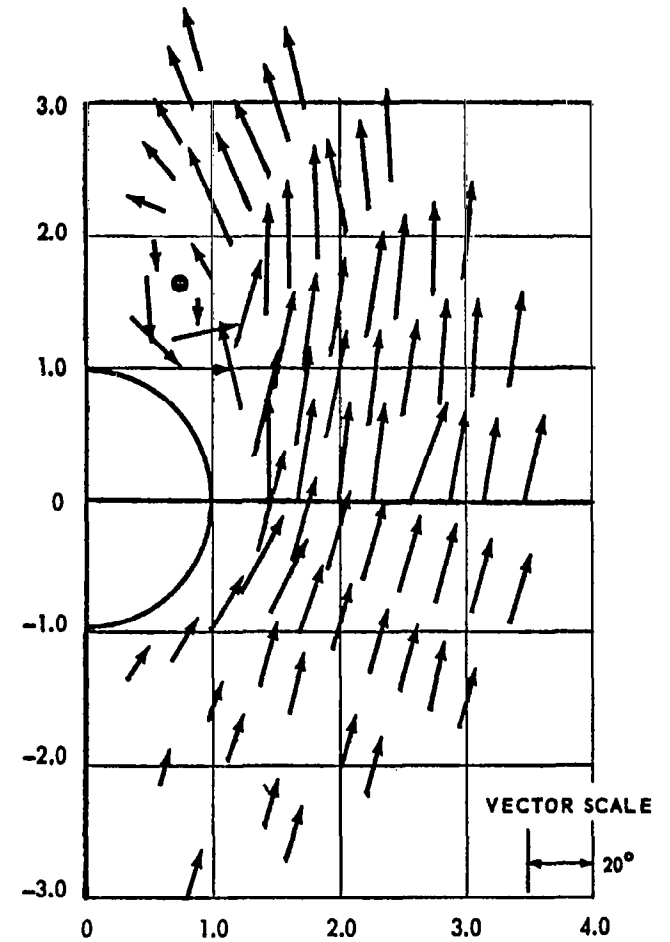
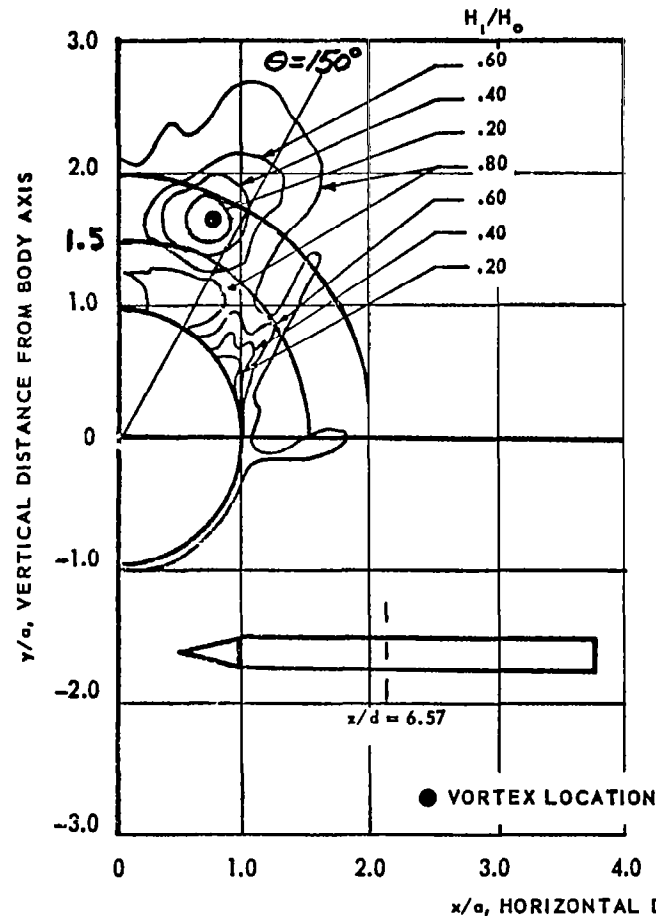


FIG. 7

APPENDIX - A

TABULATED PRESSURE DATA

M = 1.5

OAL 289-11, Runs 2,3,5, $\phi = .90$ to -180 (pp. ²²⁻⁵⁹~~72-109~~) *see errata*

M = 2.0

OAL 289-12, Run 15, $\phi = 0$ to $+90$ (pp. ⁶²⁻⁶⁹~~151-158~~)
OAL 289-7, Run 27, $\phi = +45$ to -45 (pp. ⁷²⁻⁸⁸~~537-553~~) *see errata*
OAL 289-8, Runs 35, 36, $\phi = -60$ to -135 (pp. ⁹⁰⁻¹⁰⁹~~554-573~~)
OAL 289-10, Run 29, $\phi = -35$ to -180 (pp. ¹¹¹⁻¹³²~~585-606~~)
OAL 289-19, Runs 1,2,3, $\phi_R = +30$ to -150 (pp. ¹³⁴⁻¹⁶⁵~~233-397~~ not inclusive,
32 pages in all)

NOTE:

see errata
~~Page numbering from the OAL wind tunnel test reports has been retained.~~

OAL 289-11

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta p}{q}$	ϕ	α_i	Pic Run Test
-----	-----------------------	----------------------	--------	------------	--------------

TAP	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta p}{q}$	ϕ	α_i	Pic Run Test
PTO	54.63		000.0	00.0	1 2 289-11
01	.3676	0.222			
02	.2669	-0.013			
03	.2632	-0.021			
04	.2632	-0.021			
05	.2669	-0.013			
06	.2998	0.064			
07	.9240				
08	.9259				
09	.9295				
10	.9277				
11	.9222				
12	.9259				
13	.9259				
14	.9259				
15	.9240				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	β	α_1	Pic Run Test		
PTO	54.48		-090.0	00.0	2	2	289-11
01	.3631	0.211					
02	.2603	-0.078					
03	.2529	-0.045					
04	.2529	-0.045					
05	.2584	-0.033					
06	.3025	0.070					
07	.9302						
08	.9302						
09	.9321						
10	.9321						
11	.9266						
12	.9321						
13	.9302						
14	.9302						
15	.9302						
PTO	54.88		-180.0	00.0	3	2	289-11
01	.3595	0.203					
02	.2611	-0.076					
03	.2593	-0.031					
04	.2593	-0.031					
05	.2684	-0.009					
06	.2994	0.063					
07	.9244						
08	.9244						
09	.9244						
10	.9244						
11	.9207						
12	.9244						
13	.9244						
14	.9244						
15	.9226						
PTO	54.68		060.0	04.0	4	2	289-11
01	.3553	0.193					
02	.2584	-0.033					
03	.2511	-0.050					
04	.2438	-0.067					
05	.2548	-0.041					
06	.2712	-0.003					
07	.9223						
08	.9204						
09	.9204						
10	.9223						
11	.9223						
12	.9204						
13	.9241						
14	.9241						
15	.9241						

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Kun Test	
PTO	54.68		075.0	04.0	5	2 289-11
01	.3499	0.181				
02	.2584	-0.233				
03	.2474	-0.058				
04	.2438	-0.067				
05	.2493	-0.054				
06	.2804	0.019				
07	.9186					
08	.9186					
09	.9168					
10	.9241					
11	.9259					
12	.9241					
13	.9241					
14	.9241					
15	.9241					
PTO	54.58		090.0	04.0	6	2 289-11
01	.3496	0.180				
02	.2580	-0.034				
03	.2470	-0.059				
04	.2451	-0.064				
05	.2488	-0.055				
06	.2891	0.039				
07	.9249					
08	.9249					
09	.9230					
10	.9230					
11	.9267					
12	.9285					
13	.9267					
14	.9267					
15	.9267					
PTO	54.58		-035.0	04.0	7	2 289-11
01	.3551	0.193				
02	.2653	-0.017				
03	.2653	-0.017				
04	.2598	-0.029				
05	.2653	-0.017				
06	.2653	-0.017				
07	.9267					
08	.9285					
09	.9285					
10	.9267					
11	.9249					
12	.9249					
13	.9249					
14	.9249					
15	.9249					

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH. NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.58		-040.0	04.0	8 2 289-11
01	.3578	0.199			
02	.2552	-0.040			
03	.2626	-0.023			
04	.2589	-0.031			
05	.2626	-0.023			
06	.2662	-0.014			
07	.9276				
08	.9276				
09	.9258				
10	.9258				
11	.9240				
12	.9240				
13	.9258				
14	.9258				
15	.9258				
PTO	54.48		-050.0	04.0	9 2 289-11
01	.3622	0.209			
02	.2557	-0.039			
03	.2557	-0.039			
04	.2594	-0.030			
05	.2594	-0.030			
06	.2722				
07	.9275				
08	.9293				
09	.9275				
10	.9257				
11	.9238				
12	.9275				
13	.9275				
14	.9275				
15	.9275				
PTO	54.48		-055.0	04.0	10 2 289-11
01	.3622	0.209			
02	.2557	-0.039			
03	.2539	-0.043			
04	.2557	-0.039			
05	.2575	-0.035			
06	.2759	0.008			
07	.9275				
08	.9275				
09	.9275				
10	.9238				
11	.9238				
12	.9293				
13	.9275				
14	.9275				
15	.9275				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test		
PTO	54.48		-065.0	04.0	11	2	289-11
01	.3640	0.214					
02	.2575	-0.035					
03	.2520	-0.048					
04	.2520	-0.048					
05	.2520	-0.048					
06	.2814	0.021					
07	.9257						
08	.9257						
09	.9275						
10	.9275						
11	.9275						
12	.9275						
13	.9275						
14	.9275						
15	.9275						
PTO	54.43		-070.0	04.0	12	2	289-11
01	.3643	0.214					
02	.2578	-0.034					
03	.2523	-0.047					
04	.2523	-0.047					
05	.2523	-0.047					
06	.2835	0.026					
07	.9283						
08	.9302						
09	.9283						
10	.9283						
11	.9283						
12	.9283						
13	.9283						
14	.9283						
15	.9265						
PTO	54.43		-080.0	04.0	13	2	289-11
01	.3662	0.219					
02	.2559	-0.038					
03	.2523	-0.047					
04	.2523	-0.047					
05	.2504	-0.051					
06	.2890	0.039					
07	.9302						
08	.9283						
09	.9283						
10	.9283						
11	.9283						
12	.9283						
13	.9320						
14	.9357						
15	.9283						

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.43		-150.0	04.0 14	2 289-11
01	.3652	0.216			
02	.2532	-0.045			
03	.2642	-0.019			
04	.2642	-0.019			
05	.2660	-0.015			
06	.3156	0.101			
07	.9256				
08	.9256				
09	.9256				
10	.9256				
11	.9164				
12	.9256				
13	.9274				
14	.9256				
15	.9238				
PTO	54.48		-165.0	04.0 15	2 289-11
01	.3768	0.243			
02	.2649	-0.017			
03	.2667	-0.013			
04	.2630	-0.022			
05	.2667	-0.013			
06	.3181	0.107			
07	.9238				
08	.9238				
09	.9238				
10	.9238				
11	.9165				
12	.9238				
13	.9238				
14	.9220				
15	.9202				
PTO	54.43		-180.0	04.0 16	2 289-11
01	.3698	0.227			
02	.2559	-0.038			
03	.2578	-0.034			
04	.2559	-0.038			
05	.2614	-0.026			
06	.3202	0.111			
07	.9210				
08	.9228				
09	.9210				
10	.9228				
11	.9192				
12	.9210				
13	.9210				
14	.9210				
15	.9192				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	54.33		060.0	08.0	17 2 289-11
01	.3503	0.182			
02	.2472	-0.059			
03	.2343	-0.089			
04	.2251	-0.110			
05	.2343	-0.089			
06	.2656	-0.016			
07	.9209				
08	.9209				
09	.9190				
10	.9172				
11	.9209				
12	.9227				
13	.9227				
14	.9245				
15	.9227				
PTO	54.33		075.0	08.0	18 2 289-11
01	.3484	0.177			
02	.2454	-0.063			
03	.2325	-0.093			
04	.2288	-0.102			
05	.2251	-0.110			
06	.2785	0.014			
07	.9190				
08	.9172				
09	.9172				
10	.9209				
11	.9245				
12	.9227				
13	.9264				
14	.9264				
15	.9264				
PTO	54.28		090.0	08.0	19 2 289-11
01	.3359	0.148			
02	.2493	-0.054			
03	.2308	-0.097			
04	.2272	-0.105			
05	.2179	-0.127			
06	.2824	0.023			
07	.9217				
08	.9217				
09	.9217				
10	.9217				
11	.9217				
12	.9162				
13	.9272				
14	.9272				
15	.9272				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR QAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.33		-035.0	08.0	20 2 289-11
01	.3558	0.194			
02	.2564	-0.037			
03	.2527	-0.046			
04	.2490	-0.055			
05	.2251	-0.110			
06	.2601	-0.029			
07	.9301				
08	.9282				
09	.9264				
10	.9245				
11	.9227				
12	.9245				
13	.9227				
14	.9227				
15	.9227				
PTO	54.33		-040.0	08.0	21 2 289-11
01	.3595	0.203			
02	.2527	-0.046			
03	.2527	-0.046			
04	.2472	-0.059			
05	.2196	-0.123			
06	.2601	-0.029			
07	.9282				
08	.9282				
09	.9264				
10	.9227				
11	.9227				
12	.9227				
13	.9245				
14	.9209				
15	.9227				
PTO	54.28		-050.0	08.0	22 2 289-11
01	.3635	0.212			
02	.2474	-0.058			
03	.2437	-0.067			
04	.2456	-0.062			
05	.2382	-0.080			
06	.2622	-0.024			
07	.9272				
08	.9272				
09	.9272				
10	.9235				
11	.9272				
12	.9272				
13	.9272				
14	.9235				
15	.8333				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic	Run	Test
PTO	54.28		-055.0	08.0	23	2	289-11
01	.3653	0.217					
02	.2474	-0.058					
03	.2437	-0.067					
04	.2419	-0.071					
05	.2345	-0.088					
06	.2640	-0.020					
07	.9272						
08	.9272						
09	.9254						
10	.9235						
11	.9272						
12	.9272						
13	.9272						
14	.9235						
15	.7504						
PTO	54.23		-065.0	08.0	24	2	289-11
01	.3730	0.234					
02	.2476	-0.058					
03	.2421	-0.071					
04	.2384	-0.079					
05	.2274	-0.105					
06	.2753	0.007					
07	.9299						
08	.9299						
09	.9299						
10	.9281						
11	.9281						
12	.9318						
13	.9299						
14	.9299						
15	.7105						
PTO	54.33		-070.0	08.0	25	2	289-11
01	.3742	0.237					
02	.2490	-0.055					
03	.2417	-0.072					
04	.2380	-0.080					
05	.2251	-0.110					
06	.2785	0.014					
07	.9301						
08	.9301						
09	.9301						
10	.9282						
11	.9282						
12	.9301						
13	.9301						
14	.9319						
15	.7736						

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR CAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.38		-080.0	08.0 26	2 289-11
01	.3766	0.243			
02	.2497	-0.053			
03	.2405	-0.074			
04	.2387	-0.079			
05	.2203	-0.121			
06	.2828	0.024			
07	.9301				
08	.9320				
09	.9338				
10	.9320				
11	.9338				
12	.9356				
13	.9338				
14	.9338				
15	.9264				
PTO	54.33		-150.0	08.0 27	2 289-11
01	.3760	0.241			
02	.2380	-0.080			
03	.2490	-0.055			
04	.2619	-0.024			
05	.2674	-0.012			
06	.3263	0.126			
07	.9245				
08	.9227				
09	.9227				
10	.9227				
11	.9227				
12	.9245				
13	.9227				
14	.9190				
15	.9153				
PTO	54.33		-165.0	08.0 28	2 289-11
01	.3825	0.257			
02	.2555	-0.039			
03	.2592	-0.031			
04	.2665	-0.014			
05	.2702	-0.005			
06	.3125	0.093			
07	.9236				
08	.9236				
09	.9236				
10	.9236				
11	.9163				
12	.9236				
13	.9199				
14	.9163				
15	.9107				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test	
PTO	54.33		-180.0	08.0	29	2 289-11
01	.3751	0.239				
02	.2500	-0.052				
03	.2518	-0.048				
04	.2573	-0.035				
05	.2647	-0.018				
06	.3033	0.072				
07	.9236					
08	.9218					
09	.9199					
10	.9236					
11	.9199					
12	.9199					
13	.9199					
14	.9163					
15	.9089					
PTO	54.33		060.0	12.0	30	2 289-11
01	.3374	0.152				
02	.2269	-0.106				
03	.2159	-0.132				
04	.1938	-0.183				
05	.1901	-0.192				
06	.2564	-0.037				
07	.9209					
08	.9153					
09	.9172					
10	.9117					
11	.9117					
12	.9117					
13	.9209					
14	.9227					
15	.9227					
PTO	54.28		075.0	12.0	31	2 289-11
01	.3432	0.165				
02	.2272	-0.105				
03	.2161	-0.131				
04	.2014	-0.165				
05	.2032	-0.161				
06	.2622	-0.024				
07	.9217					
08	.9162					
09	.9199					
10	.9180					
11	.9199					
12	.9180					
13	.9235					
14	.9272					
15	.9291					

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.28		090.0	12.0	32 2 289-11
01	.3285	0.131			
02	.2327	-0.093			
03	.2143	-0.135			
04	.2014	-0.165			
05	.1922	-0.187			
06	.2511	-0.050			
07	.9254				
08	.9235				
09	.9235				
10	.9217				
11	.9217				
12	.9199				
13	.9254				
14	.9291				
15	.9309				
PTO	54.48		-035.0	12.0	33 2 289-11
01	.3493	0.179			
02	.2520	-0.048			
03	.2300	-0.099			
04	.2098	-0.146			
05	.2043	-0.159			
06	.2594	-0.030			
07	.9202				
08	.9275				
09	.9238				
10	.9183				
11	.9128				
12	.9165				
13	.9110				
14	.9018				
15	.9073				
PTO	54.48		-040.0	12.0	34 2 289-11
01	.3539	0.190			
02	.2456	-0.062			
03	.2309	-0.097			
04	.2107	-0.144			
05	.2217	-0.118			
06	.2529	-0.045			
07	.9229				
08	.9284				
09	.9247				
10	.9229				
11	.9137				
12	.9174				
13	.9119				
14	.8990				
15	.6274				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.38		-050.0	12.0	35 2 289-11
01	.3610	0.207			
02	.2341	-0.089			
03	.2212	-0.119			
04	.2083	-0.149			
05	.1936	-0.184			
06	.2488	-0.055			
07	.9218				
08	.9255				
09	.9218				
10	.9255				
11	.9182				
12	.9200				
13	.9127				
14	.8887				
15	.5890				
PTO	54.33		-055.0	12.0	36 2 289-11
01	.3632	0.212			
02	.2288	-0.102			
03	.2196	-0.123			
04	.2049	-0.157			
05	.1846	-0.205			
06	.2509	-0.050			
07	.9227				
08	.9264				
09	.9264				
10	.9282				
11	.9209				
12	.9227				
13	.9153				
14	.8877				
15	.4846				
PTO	54.38		-065.0	12.0	37 2 289-11
01	.3665	0.219			
02	.2304	-0.098			
03	.2212	-0.119			
04	.2047	-0.158			
05	.1955	-0.179			
06	.2580	-0.034			
07	.9255				
08	.9292				
09	.9292				
10	.9292				
11	.9218				
12	.9274				
13	.9237				
14	.9200				
15	.5375				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.38		-070.0	12.0 38	2 289-11
01	.3693	0.226			
02	.2313	-0.096			
03	.2221	-0.117			
04	.2056	-0.156			
05	.1927	-0.186			
06	.2608	-0.027			
07	.9264				
08	.9301				
09	.9301				
10	.9301				
11	.9264				
12	.9320				
13	.9320				
14	.9264				
15	.7021				
PTO	54.33		-080.0	12.0 39	2 289-11
01	.3742	0.237			
02	.2306	-0.097			
03	.2196	-0.123			
04	.2085	-0.149			
05	.1865	-0.200			
06	.2601	-0.029			
07	.9337				
08	.9337				
09	.9337				
10	.9337				
11	.9301				
12	.9337				
13	.9337				
14	.9319				
15	.9245				
PTO	54.33		-150.0	12.0 40	2 289-11
01	.3816	0.258			
02	.2251	-0.110			
03	.2306	-0.097			
04	.2509	-0.050			
05	.2564	-0.037			
06	.3116	0.091			
07	.9227				
08	.9227				
09	.9172				
10	.9209				
11	.9172				
12	.9190				
13	.9117				
14	.9024				
15	.8988				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic	Run	Test
PTO	54.33		-165.0	17.0	41	2	289-11
01	.3880	0.269					
02	.7426	-0.069					
03	.7408	-0.074					
04	.7610	-0.027					
05	.7702	-0.005					
06	.3144	0.098					
07	.9218						
08	.9199						
09	.9163						
10	.9199						
11	.9144						
12	.9199						
13	.9107						
14	.9034						
15	.8960						
PTO	54.33		-180.0	12.0	42	2	289-11
01	.3742	0.237					
02	.2380	-0.080					
03	.2343	-0.089					
04	.2527	-0.046					
05	.2693	-0.007					
06	.3135	0.096					
07	.9190						
08	.9153						
09	.9117						
10	.9153						
11	.9117						
12	.9117						
13	.9117						
14	.9043						
15	.8859						
PTO	54.33		060.0	16.0	43	2	289-11
01	.3236	0.119					
02	.1966	-0.177					
03	.1708	-0.237					
04	.1542	-0.275					
05	.2150	-0.134					
06	.2095	-0.147					
07	.9273						
08	.9218						
09	.9255						
10	.9163						
11	.9218						
12	.9199						
13	.9236						
14	.9255						
15	.9255						

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.38		075.0	16.0 44	2 289-11
01	.3233	0.119			
02	.2056	-0.156			
03	.1798	-0.216			
04	.1578	-0.267			
05	.1615	-0.258			
06	.2442	-0.066			
07	.9301				
08	.9228				
09	.9320				
10	.9246				
11	.9283				
12	.9264				
13	.9320				
14	.9356				
15	.9375				
PTO	54.38		090.0	16.0 45	2 289-11
01	.3086	0.084			
02	.2166	-0.130			
03	.1890	-0.194			
04	.1762	-0.224			
05	.1743	-0.229			
06	.2442	-0.066			
07	.9338				
08	.9301				
09	.9320				
10	.9264				
11	.9301				
12	.9283				
13	.9356				
14	.9393				
15	.9430				
PTO	54.38		-035.0	16.0 46	2 289-11
01	.3380	0.153			
02	.2313	-0.096			
03	.1909	-0.190			
04	.1063	-0.387			
05	.1053	-0.387			
06	.2313	-0.096			
07	.9081				
08	.9172				
09	.9081				
10	.9044				
11	.8786				
12	.8805				
13	.8455				
14	.7278				
15	.4961				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	54.38		-040.0	16.0	47 2 289-11
01	.3380	0.153			
02	.2166	-0.130			
03	.1762	-0.224			
04	.1210	-0.353			
05	.1210	-0.353			
06	.2405	-0.074			
07	.9099				
08	.9191				
09	.9117				
10	.9081				
11	.8841				
12	.8823				
13	.8051				
14	.5734				
15	.5764				
PTO	54.38		-050.0	16.0	48 2 289-11
01	.3472	0.174			
02	.2093	-0.147			
03	.1762	-0.224			
04	.1670	-0.246			
05	.2056	-0.156			
06	.2258	-0.109			
07	.9117				
08	.9209				
09	.9154				
10	.9136				
11	.8915				
12	.8860				
13	.8051				
14	.4373				
15	.4557				
PTO	54.38		-055.0	16.0	49 2 289-11
01	.3509	0.183			
02	.2056	-0.156			
03	.1780	-0.220			
04	.1798	-0.216			
05	.1909	-0.190			
06	.2166	-0.130			
07	.9172				
08	.9228				
09	.9191				
10	.9154				
11	.9007				
12	.8970				
13	.8345				
14	.4961				
15	.4741				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.43		-065.0	16.0 50	2 289-11
01	.3579	0.199			
02	.2072	-0.152			
03	.1870	-0.199			
04	.1595	-0.263			
05	.1503	-0.285			
06	.2274	-0.105			
07	.9219				
08	.9256				
09	.9219				
10	.9256				
11	.9182				
12	.9146				
13	.9072				
14	.8209				
15	.8190				
PTO	54.38		-070.0	16.0 51	2 289-11
01	.3601	0.204			
02	.2111	-0.143			
03	.1890	-0.194			
04	.1578	-0.267			
05	.1523	-0.280			
06	.2350	-0.087			
07	.9228				
08	.9283				
09	.9283				
10	.9320				
11	.9228				
12	.9228				
13	.9117				
14	.8933				
15	.8694				
PTO	54.38		-080.0	16.0 52	2 289-11
01	.3693	0.226			
02	.2129	-0.139			
03	.2019	-0.164			
04	.1688	-0.241			
05	.1523	-0.280			
06	.2369	-0.083			
07	.9301				
08	.9320				
09	.9283				
10	.9283				
11	.9264				
12	.9301				
13	.9264				
14	.9154				
15	.9044				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	54.38		-150.0	16.0	53 2 289-11
01	.3932	0.282			
02	.2277	-0.104			
03	.2313	-0.096			
04	.2497	-0.053			
05	.2516	-0.048			
06	.3178	0.106			
07	.9191				
08	.9136				
09	.8989				
10	.9081				
11	.8933				
12	.8933				
13	.8823				
14	.8731				
15	.6341				
PTO	54.38		-165.0	16.0	54 2 289-11
01	.4005	0.299			
02	.2424	-0.070			
03	.2460	-0.062			
04	.2681	-0.010			
05	.2828	0.024			
06	.3306	0.136			
07	.9172				
08	.9117				
09	.9025				
10	.9117				
11	.9025				
12	.9044				
13	.8915				
14	.8713				
15	.8529				
PTO	54.38		-180.0	16.0	55 2 289-11
01	.3840	0.260			
02	.2424	-0.070			
03	.2424	-0.070			
04	.2644	-0.019			
05	.2883	0.037			
06	.3306	0.136			
07	.9007				
08	.9117				
09	.9025				
10	.9117				
11	.9025				
12	.9081				
13	.9007				
14	.8860				
15	.8639				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	54.43		000.0	20.0	56 2 289-11
01	.3505	0.182			
02	.2568	-0.036			
03	.2513	-0.049			
04	.1668	-0.246			
05	.1760	-0.225			
06	.2532	-0.045			
07	.8595				
08	.8686				
09	.9109				
10	.8870				
11	.8650				
12	.8650				
13	.8448				
14	.8227				
15	.8154				
PTO	54.48		015.0	20.0	57 2 289-11
01	.3300	0.134			
02	.2309	-0.097			
03	.2199	-0.122			
04	.1171	-0.362			
05	.1575	-0.268			
06	.2272	-0.105			
07	.8844				
08	.8880				
09	.8935				
10	.8715				
11	.8623				
12	.8807				
13	.8605				
14	.8366				
15	.8146				
PTO	54.48		030.0	20.0	58 2 289-11
01	.2970	0.057			
02	.1832	-0.208			
03	.1300	-0.332			
04	.0804	-0.448			
05	.1428	-0.302			
06	.2309	-0.097			
07	.9082				
08	.9064				
09	.9137				
10	.8954				
11	.8954				
12	.8917				
13	.8770				
14	.8605				
15	.8421				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	54.48		045.0	20.0	59 2 289-11
01	.2805	0.019			
02	.1667	-0.246			
03	.1391	-0.311			
04	.1189	-0.358			
05	.1960	-0.178			
06	.2199	-0.122			
07	.9247				
08	.9174				
09	.9284				
10	.9137				
11	.9211				
12	.9174				
13	.9101				
14	.9046				
15	.9009				
PTO	54.48		060.0	20.0	60 2 289-11
01	.2896	0.040			
02	.1648	-0.251			
03	.1483	-0.289			
04	.1465	-0.293			
05	.2052	-0.157			
06	.2144	-0.135			
07	.9358				
08	.9266				
09	.9376				
10	.9229				
11	.9394				
12	.9284				
13	.9321				
14	.9358				
15	.9358				
PTO	54.48		075.0	20.0	61 2 289-11
01	.2896	0.040			
02	.1703	-0.238			
03	.1557	-0.272			
04	.1428	-0.302			
05	.1557	-0.272			
06	.2363	-0.079			
07	.9394				
08	.9302				
09	.9431				
10	.9339				
11	.9431				
12	.9376				
13	.9449				
14	.9468				
15	.9523				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.48		090.0	20.0	62 2 289-11
01	.2612	-0.026			
02	.1878	-0.197			
03	.1602	-0.262			
04	.1474	-0.291			
05	.1437	-0.300			
06	.2777	0.012			
07	.9422				
08	.9348				
09	.9440				
10	.9367				
11	.9477				
12	.9440				
13	.9514				
14	.7605				
15	.9569				
PTO	54.40		-015.0	20.0	1 3 289-11
01	.3318	0.138			
02	.2289	-0.101			
03	.1847	-0.204			
04	.0818	-0.444			
05	.1461	-0.294			
06	.2123	-0.140			
07	.8833				
08	.8998				
09	.8869				
10	.8649				
11	.8465				
12	.8575				
13	.8502				
14	.7693				
15	.8483				
PTO	54.50		-030.0	20.0	2 3 289-11
01	.3046	0.075			
02	.2000	-0.169			
03	.1339	-0.323			
04	.0771	-0.455			
05	.1486	-0.289			
06	.2239	-0.113			
07	.8734				
08	.8899				
09	.8752				
10	.8661				
11	.8257				
12	.8422				
13	.8404				
14	.8073				
15	.5394				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Hun Test
PTO	54.50		-035.0	20.0	3 3 289-11
01	.2991	0.062			
02	.1927	-0.186			
03	.1321	-0.327			
04	.0935	-0.417			
05	.1670	-0.246			
06	.2275	-0.105			
07	.8716				
08	.8899				
09	.8734				
10	.8606				
11	.8110				
12	.8257				
13	.8239				
14	.7945				
15	.5046				
PTO	54.40		-040.0	20.0	4 3 289-11
01	.2904	0.042			
02	.1783	-0.219			
03	.1342	-0.322			
04	.1268	-0.339			
05	.1930	-0.185			
06	.2132	-0.138			
07	.8750				
08	.8879				
09	.8732				
10	.8529				
11	.7849				
12	.7813				
13	.7261				
14	.6544				
15	.5404				
PTO	54.80		-015.0	20.0	1 5 289-11
01	.2245	-0.112			
02	.2354	-0.086			
03	.2080	-0.150			
04	.1040	-0.392			
05	.1551	-0.273			
06	.2190	-0.124			
07	.8250				
08	.9015				
09	.8887				
10	.8668				
11	.8467				
12	.8577				
13	.8449				
14	.7974				
15	.6412				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.90		-030.0	20.0	2 5 289-11
01	.1876	-0.198			
02	.2095	-0.147			
03	.1366	-0.317			
04	.0765	-0.457			
05	.1475	-0.291			
06	.2240	-0.113			
07	.8743				
08	.8925				
09	.8743				
10	.8670				
11	.8324				
12	.8488				
13	.8434				
14	.7772				
15	.5501				
PTO	54.80		-035.0	20.0	3 5 289-11
01	.1807	-0.214			
02	.2007	-0.167			
03	.1405	-0.307			
04	.0894	-0.427			
05	.1588	-0.265			
06	.2245	-0.112			
07	.8704				
08	.8887				
09	.8704				
10	.8595				
11	.8157				
12	.8339				
13	.8266				
14	.6423				
15	.4909				
PTO	54.60		-040.0	20.0	4 5 289-11
01	.1648	-0.251			
02	.1850	-0.204			
03	.1502	-0.285			
04	.1190	-0.358			
05	.1832	-0.208			
06	.2179	-0.127			
07	.8718				
08	.8983				
09	.8718				
10	.8535				
11	.7930				
12	.8022				
13	.7656				
14	.6319				
15	.5110				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic	Run	Test
PTO	54.60		-045.0	20.0	5	5	289-11
01	.1593	-0.264					
02	.1813	-0.212					
03	.1538	-0.276					
04	.1410	-0.306					
05	.2033	-0.161					
06	.2125	-0.140					
07	.8773						
08	.8901						
09	.8736						
10	.8516						
11	.7747						
12	.7546						
13	.6868						
14	.6758						
15	.6117						
PTO	54.60		-050.0	20.0	6	5	289-11
01	.1557	-0.272					
02	.1795	-0.217					
03	.1593	-0.264					
04	.1648	-0.251					
05	.2070	-0.152					
06	.2070	-0.152					
07	.8828						
08	.8974						
09	.8773						
10	.8590						
11	.7747						
12	.6630						
13	.5879						
14	.7051						
15	.8352						
PTO	54.45		-055.0	20.0	7	5	289-11
01	.1543	-0.275					
02	.1763	-0.224					
03	.1616	-0.258					
04	.1781	-0.220					
05	.2020	-0.164					
06	.2057	-0.155					
07	.8907						
08	.9036						
09	.8834						
10	.8613						
11	.7548						
12	.6428						
13	.4096						
14	.5693						
15	.8430						

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.45		-060.0	20.0	8 5 289-11
01	.1579	-0.267			
02	.1763	-0.224			
03	.1579	-0.267			
04	.1855	-0.203			
05	.1837	-0.207			
06	.2149	-0.134			
07	.8981				
08	.9091				
09	.8907				
10	.8724				
11	.7530				
12	.5326				
13	.3012				
14	.4720				
15	.8283				
PTO	54.40		-065.0	20.0	9 5 289-11
01	.1581	-0.266			
02	.1765	-0.224			
03	.1526	-0.279			
04	.1857	-0.202			
05	.1526	-0.279			
06	.2188	-0.125			
07	.9044				
08	.9154				
09	.9007				
10	.8915				
11	.8107				
12	.5607				
13	.3125				
14	.5129				
15	.8235				
PTO	54.30		-070.0	20.0	10 5 289-11
01	.1602	-0.262			
02	.1823	-0.210			
03	.1547	-0.274			
04	.1713	-0.236			
05	.1602	-0.262			
06	.2247	-0.111			
07	.9134				
08	.9245				
09	.9116				
10	.9079				
11	.8729				
12	.6722				
13	.4991				
14	.5967				
15	.8250				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic	Run	Test
PTO	54.40		-075.0	20.0	11	5	289-11
01	.1654	-0.249					
02	.1801	-0.215					
03	.1581	-0.266					
04	.1526	-0.279					
05	.1489	-0.288					
06	.2224	-0.117					
07	.9191						
08	.9265						
09	.9210						
10	.9191						
11	.9026						
12	.8732						
13	.7537						
14	.7537						
15	.8254						
PTO	54.45		-080.0	20.0	12	5	289-11
01	.1690	-0.241					
02	.1781	-0.220					
03	.1616	-0.258					
04	.1459	-0.293					
05	.1377	-0.314					
06	.2167	-0.130					
07	.9201						
08	.9275						
09	.9256						
10	.9183						
11	.9128						
12	.8944						
13	.8430						
14	.7952						
15	.8283						
PTO	54.35		-090.0	20.0	13	5	289-11
01	.1472	-0.292					
02	.1895	-0.193					
03	.1766	-0.223					
04	.1527	-0.279					
05	.1288	-0.335					
06	.2006	-0.167					
07	.9255						
08	.9292						
09	.9255						
10	.9255						
11	.9200						
12	.9052						
13	.8648						
14	.8151						
15	.8372						

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	54.35		-105.0	20.0 14	5 289-11
01	.1656	-0.249			
02	.1785	-0.219			
03	.1656	-0.249			
04	.1638	-0.253			
05	.1288	-0.335			
06	.1343	-0.322			
07	.9255				
08	.9255				
09	.9108				
10	.9181				
11	.8979				
12	.8372				
13	.6127				
14	.6845				
15	.8316				
PTO	54.35		-120.0	20.0 15	5 289-11
01	.1711	-0.236			
02	.2098	-0.146			
03	.1858	-0.202			
04	.1914	-0.189			
05	.1417	-0.305			
06	.1877	-0.197			
07	.9144				
08	.9108				
09	.8832				
10	.8850				
11	.7912				
12	.5833				
13	.3717				
14	.4765				
15	.8372				
PTO	54.35		-125.0	20.0 16	5 289-11
01	.1895	-0.193			
02	.2153	-0.133			
03	.2226	-0.116			
04	.2226	-0.116			
05	.1969	-0.176			
06	.2668	-0.013			
07	.8960				
08	.8850				
09	.8556				
10	.8592				
11	.8077				
12	.7912				
13	.7470				
14	.6569				
15	.5980				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	54.30		-150.0	20.0	17 5 289-11
01	.2118	-0.141			
02	.2357	-0.086			
03	.2486	-0.055			
04	.2523	-0.047			
05	.2578	-0.034			
06	.3278	0.129			
07	.8969				
08	.8858				
09	.8600				
10	.8803				
11	.8582				
12	.8656				
13	.8532				
14	.8343				
15	.5341				
PTO	54.30		-165.0	20.0	18 5 289-11
01	.2376	-0.081			
02	.2431	-0.068			
03	.2634	-0.021			
04	.2762	0.009			
05	.3112	0.090			
06	.3333	0.142			
07	.9042				
08	.8895				
09	.8656				
10	.8766				
11	.8674				
12	.8729				
13	.8564				
14	.8343				
15	.8269				
PTO	54.30		-180.0	20.0	19 5 289-11
01	.2652	-0.017			
02	.2449	-0.064			
03	.2670	-0.013			
04	.2873	0.035			
05	.3297	0.134			
06	.3407	0.159			
07	.8895				
08	.8692				
09	.8527				
10	.9006				
11	.8877				
12	.8803				
13	.8564				
14	.8361				
15	.7974				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Hun Test
PTO	54.30		000.0	23.0	20 5 289-11
01	.2560	-0.038			
02	.2634	-0.021			
03	.1989	-0.171			
04	.1068	-0.386			
05	.1694	-0.240			
06	.2320	-0.094			
07	.8490				
08	.8656				
09	.8600				
10	.8600				
11	.8361				
12	.8416				
13	.8122				
14	.7422				
15	.7735				
PTO	54.30		015.0	23.0	21 5 289-11
01	.2357	-0.086			
02	.2026	-0.163			
03	.1123	-0.373			
04	.0681	-0.476			
05	.1565	-0.270			
06	.2118	-0.141			
07	.8840				
08	.8932				
09	.8969				
10	.8729				
11	.8619				
12	.8582				
13	.8250				
14	.7495				
15	.7532				
PTO	54.30		030.0	23.0	22 5 289-11
01	.2265	-0.107			
02	.1565	-0.270			
03	.1087	-0.382			
04	.0792	-0.450			
05	.1694	-0.240			
06	.2265	-0.107			
07	.9116				
08	.9116				
09	.9227				
10	.9024				
11	.9042				
12	.9006				
13	.8821				
14	.8343				
15	.8471				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_i	Pic Run Test
PTO	54.30		045.0	23.0	23 5 289-11
01	.2155	-0.133			
02	.1492	-0.287			
03	.1492	-0.287			
04	.1363	-0.317			
05	.1971	-0.175			
06	.2026	-0.163			
07	.9300				
08	.9227				
09	.9355				
10	.9208				
11	.9319				
12	.9263				
13	.9190				
14	.8932				
15	.9098				
PTO	54.25		060.0	23.0	24 5 289-11
01	.2286	-0.102			
02	.1585	-0.265			
03	.1512	-0.282			
04	.1382	-0.313			
05	.1604	-0.261			
06	.2065	-0.154			
07	.9419				
08	.9309				
09	.9456				
10	.9364				
11	.9493				
12	.9438				
13	.9419				
14	.9364				
15	.9512				
PTO	54.30		090.0	23.0	25 5 289-11
01	.2302	-0.098			
02	.1694	-0.240			
03	.1621	-0.257			
04	.1510	-0.233			
05	.1934	-0.184			
06	.2320	-0.094			
07	.9484				
08	.9411				
09	.9558				
10	.9484				
11	.9595				
12	.9521				
13	.9595				
14	.9669				
15	.9687				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	54.35		-015.0	23.0	26 5 289-11
01	.2079	-0.150			
02	.2153	-0.133			
03	.1086	-0.382			
04	.0644	-0.485			
05	.1546	-0.275			
06	.2098	-0.146			
07	.8629				
08	.8850				
09	.8703				
10	.8556				
11	.8169				
12	.8280				
13	.8040				
14	.7268				
15	.7746				
PTO	54.35		-030.0	23.0	27 5 289-11
01	.1656	-0.249			
02	.1877	-0.197			
03	.1030	-0.395			
04	.0828	-0.442			
05	.1564	-0.270			
06	.2171	-0.129			
07	.8408				
08	.8666				
09	.8408				
10	.8353				
11	.7930				
12	.8206				
13	.8224				
14	.7672				
15	.5225				
PTO	54.35		-035.0	23.0	28 5 289-11
01	.1527	-0.279			
02	.1822	-0.210			
03	.1159	-0.365			
04	.1086	-0.382			
05	.1711	-0.236			
06	.2079	-0.150			
07	.8335				
08	.8574				
09	.8316				
10	.8224				
11	.7746				
12	.8077				
13	.8151				
14	.7360				
15	.5281				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	54.30		-040.0	23.0	29 5 289-11
01	.1400	-0.309			
02	.1805	-0.214			
03	.1308	-0.330			
04	.1418	-0.304			
05	.1842	-0.206			
06	.1971	-0.175			
07	.8306				
08	.8508				
09	.8195				
10	.8048				
11	.7459				
12	.7845				
13	.7882				
14	.6556				
15	.5120				
PTO	54.20		-045.0	23.0	30 5 289-11
01	.1365	-0.317			
02	.1808	-0.213			
03	.1421	-0.304			
04	.1605	-0.261			
05	.1900	-0.192			
06	.1919	-0.188			
07	.8358				
08	.8542				
09	.8137				
10	.7860				
11	.7103				
12	.7509				
13	.7251				
14	.5941				
15	.4963				
PTO	54.35		-050.0	23.0	31 5 289-11
01	.1325	-0.326			
02	.1803	-0.215			
03	.1546	-0.275			
04	.1674	-0.245			
05	.1987	-0.172			
06	.1932	-0.185			
07	.8445				
08	.8629				
09	.8151				
10	.7599				
11	.6311				
12	.6440				
13	.6513				
14	.7341				
15	.6072				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR QAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.30		-055.0	23.0 32	5 289-11
01	.1344	-0.322			
02	.1786	-0.219			
03	.1621	-0.257			
04	.1805	-0.214			
05	.1897	-0.193			
06	.2026	-0.163			
07	.8564				
08	.8729				
09	.8287				
10	.7680				
11	.5451				
12	.5543				
13	.5764				
14	.7551				
15	.8122				
PTO	54.30		-060.0	23.0 33	5 289-11
01	.1326	-0.326			
02	.1805	-0.214			
03	.1565	-0.270			
04	.1878	-0.197			
05	.1694	-0.240			
06	.2099	-0.146			
07	.8692				
08	.8877				
09	.8471				
10	.7901				
11	.5064				
12	.4254				
13	.3628				
14	.6077				
15	.8416				
PTO	54.30		-065.0	23.0 34	5 289-11
01	.1363	-0.317			
02	.1750	-0.227			
03	.1473	-0.292			
04	.1805	-0.214			
05	.1547	-0.274			
06	.2099	-0.146			
07	.8858				
08	.8987				
09	.8692				
10	.8048				
11	.5543				
12	.2707				
13	.3223				
14	.5396				
15	.8379				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.20		-070.0	23.0	35 5 289-11
01	.1384	-0.312			
02	.1753	-0.226			
03	.1458	-0.295			
04	.1679	-0.244			
05	.1642	-0.252			
06	.2085	-0.149			
07	.8948				
08	.9096				
09	.8911				
10	.8450				
11	.5517				
12	.3229				
13	.3911				
14	.6107				
15	.8247				
PTO	54.30		-075.0	23.0	36 5 289-11
01	.1418	-0.304			
02	.1768	-0.223			
03	.1473	-0.292			
04	.1510	-0.283			
05	.1621	-0.257			
06	.1952	-0.180			
07	.9061				
08	.9190				
09	.9098				
10	.8895				
11	.6667				
12	.5267				
13	.4954				
14	.6777				
15	.8177				
PTO	54.20		-080.0	23.0	37 5 289-11
01	.1273	-0.338			
02	.1790	-0.218			
03	.1494	-0.287			
04	.1476	-0.291			
05	.1587	-0.265			
06	.2011	-0.166			
07	.9151				
08	.9207				
09	.9188				
10	.9096				
11	.8616				
12	.7620				
13	.6531				
14	.6605				
15	.8155				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.25		-090.0	23.0 38	5 289-11
01	.1346	-0.321			
02	.1641	-0.252			
03	.1585	-0.265			
04	.1475	-0.291			
05	.1475	-0.291			
06	.2120	-0.141			
07	.9235				
08	.9272				
09	.9235				
10	.9180				
11	.8903				
12	.8350				
13	.7041				
14	.6691				
15	.8166				
PTO	54.20		-105.0	23.0 39	5 289-11
01	.1587	-0.265			
02	.1845	-0.205			
03	.1697	-0.239			
04	.1605	-0.261			
05	.1402	-0.308			
06	.1347	-0.321			
07	.9114				
08	.9133				
09	.8948				
10	.8838				
11	.6347				
12	.4705				
13	.4207				
14	.6808				
15	.8173				
PTO	54.15		-120.0	23.0 40	5 289-11
01	.1717	-0.235			
02	.2087	-0.148			
03	.1865	-0.200			
04	.1921	-0.187			
05	.1551	-0.273			
06	.1902	-0.192			
07	.8920				
08	.8846				
09	.8292				
10	.7996				
11	.5355				
12	.4783				
13	.4543				
14	.6445				
15	.8329				

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic	Run	Test
PTO	54.20		-135.0	23.0	41	5	289-11
01	.1974	-0.175					
02	.2306	-0.097					
03	.2159	-0.137					
04	.2325	-0.093					
05	.2048	-0.158					
06	.2823	0.023					
07	.8653						
08	.8487						
09	.7860						
10	.7934						
11	.7362						
12	.7491						
13	.7546						
14	.6365						
15	.5166						
PTO	54.20		-150.0	23.0	42	5	289-11
01	.2214	-0.119					
02	.2399	-0.076					
03	.2528	-0.046					
04	.2675	-0.011					
05	.2841	0.027					
06	.3376	0.152					
07	.8782						
08	.8635						
09	.8266						
10	.8506						
11	.8247						
12	.8376						
13	.8321						
14	.7970						
15	.5203						
PTO	54.20		-165.0	23.0	43	5	289-11
01	.2435	-0.067					
02	.2491	-0.054					
03	.2694	-0.007					
04	.2989	0.062					
05	.3339	0.143					
06	.3358	0.148					
07	.8930						
08	.8782						
09	.8487						
10	.8653						
11	.8469						
12	.8432						
13	.8173						
14	.7878						
15	.4188						

APPENDIX A-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-11
 AT MACH NUMBER 1.50

TAP	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	54.20		-180.0	23.0 44	5 289-11
01	.2731	0.002			
02	.2583	-0.033			
03	.2786	0.014			
04	.3063	0.079			
05	.3542	0.191			
06	.3413	0.161			
07	.8856				
08	.8616				
09	.8395				
10	.8542				
11	.8635				
12	.8524				
13	.8303				
14	.8044				
15	.4096				

OAL 289-12

APPENDIX B-IV
 TABULATED PRESSURE DATA FOR OAL TEST 289-12
 AT MACH NUMBER 2.00

Tap	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	71.11		000.0	00.0	1 15 289-12
02	.1197	-0.023			
03	.1197	-0.023			
04	.1169	-0.030			
05	.1225	-0.015			
06	.1239	-0.011			
07	.6948				
08	.6977				
09	.7019				
10	.7033				
11	.7047				
12	.7047				
13	.7075				
14	.7075				
15	.7075				
PTO	71.51		060.0	00.0	2 15 289-12
02	.1176	-0.028			
03	.1162	-0.032			
04	.1148	-0.036			
05	.1218	-0.017			
06	.1232	-0.013			
07	.7035				
08	.7035				
09	.7049				
10	.7063				
11	.7077				
12	.7063				
13	.7077				
14	.7063				
15	.7063				
PTO	71.51		075.0	00.0	3 15 289-12
02	.1162	-0.032			
03	.1162	-0.032			
04	.1148	-0.036			
05	.1218	-0.017			
06	.1246	-0.009			
07	.7021				
08	.7021				
09	.7035				
10	.7035				
11	.7049				
12	.7035				
13	.7063				
14	.7049				
15	.7049				

APPENDIX B-IV (CONT'D)
 TABULATED PRESSURE DATA FOR CAL TEST 289-12
 AT MACH NUMBER 2.00

Tap	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	71.66		090.0	00.0	4 15 289-12
02	.1160	-0.033			
03	.1160	-0.033			
04	.1160	-0.033			
05	.1229	-0.014			
06	.1243	-0.010			
07	.7035				
08	.7049				
09	.7049				
10	.7035				
11	.7063				
12	.7063				
13	.7076				
14	.7076				
15	.7076				
PTO	71.11		090.0	04.0	5 15 289-12
02	.1126	-0.042			
03	.1098	-0.050			
04	.1070	-0.058			
05	.1112	-0.046			
06	.1197	-0.023			
07	.7047				
08	.7019				
09	.7019				
10	.7033				
11	.7033				
12	.7033				
13	.6991				
14	.7033				
15	.7033				
PTO	71.26		075.0	04.0	6 15 289-12
02	.1138	-0.039			
03	.1110	-0.047			
04	.1068	-0.059			
05	.1110	-0.047			
06	.1194	-0.023			
07	.7018				
08	.7004				
09	.7004				
10	.7018				
11	.7032				
12	.7018				
13	.6990				
14	.7004				
15	.7018				

APPENDIX B-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-12
 AT MACH NUMBER 2.00

Tap	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	71.31		060.0	04.0	7 15 289-12
02	.1158	-0.033			
03	.1130	-0.041			
04	.1074	-0.057			
05	.1102	-0.049			
06	.1242	-0.010			
07	.6992				
08	.7020				
09	.7020				
10	.7020				
11	.7020				
12	.7020				
13	.6964				
14	.6992				
15	.6978				
PTO	71.31		060.0	08.0	8 15 289-12
02	.1074	-0.057			
03	.1032	-0.069			
04	.0962	-0.088			
05	.1046	-0.065			
06	.1214	-0.018			
07	.7090				
08	.7062				
09	.7048				
10	.7020				
11	.7006				
12	.6992				
13	.6992				
14	.6978				
15	.6936				
PTO	71.31		075.0	08.0	9 15 289-12
02	.1053	-0.063			
03	.0997	-0.078			
04	.0927	-0.098			
05	.0997	-0.078			
06	.1123	-0.043			
07	.7111				
08	.7069				
09	.7069				
10	.7055				
11	.7041				
12	.7027				
13	.7027				
14	.7041				
15	.7027				

APPENDIX B-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-12
 AT MACH NUMBER 2.00

Tap	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	71.31		090.0	08.0	10 15 289-12
02	.1011	-0.075			
03	.0955	-0.090			
04	.0913	-0.102			
05	.0941	-0.094			
06	.1053	-0.063			
07	.7125				
08	.7083				
09	.7083				
10	.7069				
11	.7055				
12	.7055				
13	.7055				
14	.7069				
15	.7069				
PTO	71.06		090.0	12.0	11 15 289-12
02	.0832	-0.125			
03	.0719	-0.156			
04	.0804	-0.132			
05	.0832	-0.125			
06	.1043	-0.066			
07	.7333				
08	.7277				
09	.7277				
10	.7249				
11	.7235				
12	.7207				
13	.7221				
14	.7249				
15	.7291				
PTO	71.31		075.0	12.0	12 15 289-12
02	.0885	-0.110			
03	.0913	-0.102			
04	.0759	-0.145			
05	.0857	-0.118			
06	.1123	-0.043			
07	.7322				
08	.7265				
09	.7265				
10	.7223				
11	.7209				
12	.7181				
13	.7195				
14	.7223				
15	.7223				

APPENDIX B-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-12
 AT MACH NUMBER 2.00

Tap	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta P}{q}$	ϕ	α_1	Pic Run Test
PTO	71.36		060.0	12.0	13 15 239-12
02	.0905	-0.104			
03	.0905	-0.104			
04	.0723	-0.155			
05	.0835	-0.124			
06	.1186	-0.076			
07	.7267				
08	.7197				
09	.7211				
10	.7155				
11	.7127				
12	.7099				
13	.7113				
14	.7099				
15	.7029				
PTO	71.31		060.0	16.0	14 15 289-12
02	.0801	-0.133			
03	.0773	-0.141			
04	.0632	-0.180			
05	.0787	-0.137			
06	.0997	-0.078			
07	.7504				
08	.7406				
09	.7476				
10	.7392				
11	.7420				
12	.7364				
13	.7350				
14	.7336				
15	.7237				
PTO	71.21		075.0	16.0	15 15 289-12
02	.0690	-0.164			
03	.0774	-0.141			
04	.0493	-0.219			
05	.0760	-0.145			
06	.0900	-0.106			
07	.7557				
08	.7458				
09	.7500				
10	.7458				
11	.7486				
12	.7458				
13	.7472				
14	.7486				
15	.7486				

APPENDIX B-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-12
 AT MACH NUMBER 2.00

Tap	$\frac{P_x}{P_{t,o}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	71.21		090.0	16.0	16 15 289-12
02	.0760	-0.145			
03	.0690	-0.164			
04	.0395	-0.247			
05	.0802	-0.133			
06	.0802	-0.133			
07	.7571				
08	.7500				
09	.7528				
10	.7500				
11	.7514				
12	.7500				
13	.7514				
14	.7514				
15	.7585				
PTO	71.21		090.0	20.0	17 15 289-12
02	.0802	-0.133			
03	.0661	-0.172			
04	.0423	-0.239			
05	.0802	-0.133			
06	.0605	-0.188			
07	.7851				
08	.7767				
09	.7837				
10	.7809				
11	.7880				
12	.7908				
13	.7936				
14	.7964				
15	.7950				
PTO	71.21		075.0	20.0	18 15 289-12
02	.0704	-0.160			
03	.0605	-0.188			
04	.0465	-0.227			
05	.0802	-0.133			
06	.0774	-0.141			
07	.7823				
08	.7711				
09	.7823				
10	.7767				
11	.7851				
12	.7837				
13	.7880				
14	.7908				
15	.7823				

APPENDIX B-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-12
 AT MACH NUMBER 2.00

Tap	$\frac{P_x}{P_{t,0}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
PTO	71.16		060.0	20.0	19 15 289-12
02	.0662	-0.172			
03	.0676	-0.168			
04	.0507	-0.215			
05	.0676	-0.168			
06	.0831	-0.125			
07	.7787				
08	.7646				
09	.7773				
10	.7674				
11	.7759				
12	.7730				
13	.7716				
14	.7730				
15	.7520				
PTO	71.16		060.0	23.0	20 15 289-12
02	.0690	-0.164			
03	.0592	-0.192			
04	.0465	-0.227			
05	.0690	-0.164			
06	.0746	-0.149			
07	.7969				
08	.7829				
09	.8012				
10	.7913				
11	.8040				
12	.8026				
13	.7955				
14	.8054				
15	.7829				
PTO	71.11		075.0	23.0	21 15 289-12
02	.0761	-0.144			
03	.0578	-0.196			
04	.0409	-0.243			
05	.0901	-0.105			
06	.0719	-0.156			
07	.8073				
08	.7933				
09	.8087				
10	.8017				
11	.8144				
12	.8158				
13	.8158				
14	.8270				
15	.8186				

APPENDIX B-IV (CONT'D)
 TABULATED PRESSURE DATA FOR OAL TEST 289-12
 AT EACH NUMBER 2.00

Tap	$\frac{p_x}{p_{t,o}}$	$\frac{\Delta p}{q}$	ϕ	α_1	Pic Run Test
P10	70.96		090.0	23.0	22 15 289-12
02	.0875	-0.113			
03	.0692	-0.164			
04	.0466	-0.227			
05	.0889	-0.109			
06	.0593	-0.191			
07	.8076				
08	.7978				
09	.8090				
10	.8062				
11	.8175				
12	.8203				
13	.8231				
14	.8302				
15	.8302				

OAL 289-7

APPENDIX E
TABULATED PRESSURE DATA
TABLE II OAL TEST 289-7 M = 2.00

TAP	p_x	$p_x/p_{t,o}$	$\Delta p/q$	a_i	ϕ	DP	Pic	Run	Test
PTO	69.55			00.0	000	-12	1	27	289-07
1	08.35	.1201	-0.022						
2	08.35	.1201	-0.022						
4	08.35	.1201	-0.022						
5	08.25	.1186	-0.026						
6	08.55	.1229	-0.014						
7	48.55	.6981							
8	48.05	.6909							
9	48.45	.6966							
10	48.75	.7009							
11	48.85	.7024							
12	48.85	.7024							
13	48.95	.7038							
14	49.05	.7052							
15	49.05	.7052							
PTO	70.10			04.0	000	-12	2	27	289-07
1	08.45	.1205	-0.020						
2	08.45	.1205	-0.020						
4	08.45	.1205	-0.020						
5	08.45	.1205	-0.020						
6	09.85	.1405	0.035						
7	48.85	.6969							
8	48.35	.6897							
9	48.85	.6969							
10	49.05	.6997							
11	48.95	.6983							
12	48.95	.6983							
13	48.95	.6983							
14	48.85	.6969							
15	48.75	.6954							
PTO	70.15			08.0	000	-12	3	27	289-07
1	08.05	.1148	-0.036						
2	08.25	.1176	-0.029						
4	08.65	.1233	-0.013						
5	08.65	.1233	-0.013						
6	09.05	.1290	0.003						
7	48.25	.6878							
8	47.85	.6821							
9	48.25	.6878							
10	48.35	.6892							
11	48.25	.6878							
12	48.25	.6878							
13	47.65	.6793							
14	47.55	.6778							
15	46.95	.6693							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α _x	β	DP	Fic	Run	Test
PTO	70.35			12.0	000	-12	4	27	289-37
1	07.65	.1087	-0.053						
2	07.95	.1130	-0.041						
4	08.65	.1230	-0.013						
5	08.65	.1230	-0.013						
6	09.05	.1286	0.002						
7	47.05	.6816							
8	47.25	.6731							
9	47.35	.6731							
10	46.45	.6603							
11	45.45	.6461							
12	44.95	.6389							
13	46.05	.6546							
14	46.95	.6674							
15	46.25	.6574							
PTO	70.65			16.0	000	-17	5	27	289-37
1	06.95	.0984	-0.082						
2	07.75	.1097	-0.051						
4	07.75	.1097	-0.051						
5	06.45	.0913	-0.102						
6	07.15	.1012	-0.074						
7	47.75	.6759							
8	47.25	.6638							
9	47.25	.6638							
10	45.95	.6504							
11	44.45	.6292							
12	42.55	.6207							
13	42.05	.5952							
14	42.65	.6037							
15	42.15	.5966							
PTO	69.65			20.0	000	-17	6	27	289-37
1	06.60	.0948	-0.092						
2	07.90	.1134	-0.040						
4	02.70	.0388	-0.249						
5	03.80	.0546	-0.205						
6	05.60	.0804	-0.132						
7	47.70	.6849							
8	47.40	.6805							
9	47.40	.6805							
10	45.90	.6590							
11	43.80	.6280							
12	43.40	.6231							
13	41.20	.5915							
14	38.00	.5455							
15	33.90	.4867							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,0}	$\Delta P/q$	α_x	ϕ	DP	Pic	Run	Test
PTO	69.40			23.0	000	-17	7	27	289-07
1	06.80	.0980	-0.023						
2	08.30	.1196	-0.023						
4	01.60	.0231	-0.223						
5	03.60	.0519	-0.212						
6	05.10	.0735	-0.152						
7	48.60	.7003							
8	48.10	.6931							
9	47.80	.6889							
10	46.40	.6586							
11	44.10	.6354							
12	43.50	.6268							
13	41.60	.5994							
14	38.20	.5604							
15	33.50	.4827							
PTO	70.05			00.0,	015	-18	3	27	289-07
1	08.40	.1199	-0.022						
2	08.30	.1185	-0.026						
4	08.30	.1185	-0.026						
5	08.20	.1171	-0.030						
6	08.40	.1199	-0.022						
7	48.40	.6909							
8	48.70	.6952							
9	49.00	.6995							
10	49.20	.7024							
11	49.40	.7052							
12	49.40	.7052							
13	49.40	.7052							
14	49.40	.7052							
15	49.50	.7066							
PTO	69.35			04.5	015	-18	9	27	289-07
1	08.40	.1211	-0.010						
2	08.30	.1197	-0.023						
4	08.30	.1197	-0.023						
5	08.20	.1182	-0.027						
6	09.60	.1384	-0.030						
7	47.70	.6878							
8	48.10	.6936							
9	48.40	.6979							
10	48.50	.6994							
11	48.50	.6994							
12	48.40	.6979							
13	47.70	.6806							
14	48.40	.6979							
15	48.30	.6965							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,0}	ΔP/q	α _g	g	DP	Ptc	Rum.	Test
PTO	69.65			08.0	015	-18	10	27	289-07
1	08.10	.1163	-0.032						
2	08.00	.1149	-0.036						
4	08.30	.1192	-0.024						
5	08.20	.1177	-0.028						
6	08.20	.1321	0.012						
7	47.50	.6820							
8	47.30	.6863							
9	48.00	.6892							
10	47.90	.6877							
11	47.60	.6834							
12	47.60	.6834							
13	47.00	.6748							
14	47.10	.6762							
15	46.50	.6676							
PTO	69.65			12.0	015	-18	11	27	289-07
1	07.40	.1062	-0.060						
2	07.50	.1077	-0.056						
4	07.90	.1134	-0.040						
5	08.00	.1149	-0.036						
6	08.60	.1235	-0.012						
7	47.40	.6805							
8	47.60	.6834							
9	47.70	.6849							
10	47.10	.6762							
11	46.30	.6648							
12	45.90	.6590							
13	44.60	.6403							
14	43.80	.6289							
15	41.50	.5958							
PTO	70.00			16.0	015	-18	12	27	289-07
1	06.30	.0971	-0.086						
2	07.00	.1000	-0.078						
4	05.70	.0814	-0.130						
5	04.30	.0686	-0.165						
6	06.20	.0886	-0.110						
7	48.60	.6943							
8	48.70	.6957							
9	48.80	.6971							
10	47.80	.6829							
11	46.80	.6686							
12	46.30	.6614							
13	45.20	.6457							
14	43.40	.6200							
15	40.60	.5800							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,o}	ΔP/q	α _t	φ	DP	Pic	Run	Test
PTO	69.80			20.0	015	-18	13	27	289-07
1	06.20	.0888	-0.100						
2	06.40	.0917	-0.101						
4	01.80	.0250	-0.235						
5	03.90	.0544	-0.205						
6	05.60	.0802	-0.133						
7	50.00	.7163							
8	49.90	.7149							
9	50.20	.7132							
10	49.00	.7020							
11	47.70	.6862							
12	47.60	.6819							
13	46.10	.6606							
14	43.70	.6261							
15	40.50	.5802							
PTO	69.85			23.0	015	-18	14	27	289-07
1	06.20	.0859	-0.117						
2	05.60	.0802	-0.133						
4	01.40	.0200	-0.301						
5	03.50	.0501	-0.217						
6	05.00	.0716	-0.157						
7	51.20	.7330							
8	51.20	.7330							
9	51.60	.7387							
10	50.30	.7201							
11	48.10	.7029							
12	49.00	.7015							
13	47.40	.6796							
14	45.00	.6442							
15	41.20	.5898							
PTO	69.85			00.0	020	-18	15	27	289-07
1	08.50	.1217	-0.017						
2	08.40	.1203	-0.021						
4	08.30	.1188	-0.025						
5	08.10	.1160	-0.033						
6	08.40	.1203	-0.021						
7	48.90	.7001							
8	49.20	.7044							
9	49.20	.7044							
10	49.30	.7058							
11	49.40	.7072							
12	49.30	.7058							
13	49.30	.7058							
14	49.40	.7072							
15	49.40	.7072							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,o}	ΔP/q	α _i	φ	DP	Pic	Rum	Test
PTO	69.85			04.0	030	-18	16	27	289-07
1	08.50	.1217	-0.017						
2	08.30	.1188	-0.025						
4	08.20	.1174	-0.029						
5	08.10	.1160	-0.032						
6	08.50	.1374	-0.027						
7	48.90	.7001							
8	49.10	.7029							
9	49.10	.7029							
10	49.20	.7044							
11	49.10	.7029							
12	49.00	.7015							
13	48.10	.6836							
14	48.80	.6936							
15	48.60	.6958							
PTO	69.75			08.0	030	-18	17	27	289-07
1	08.10	.1161	-0.033						
2	07.80	.1118	-0.045						
4	07.70	.1104	-0.049						
5	07.10	.1018	-0.075						
6	08.90	.1276	-0.001						
7	48.70	.6982							
8	48.70	.6982							
9	48.70	.6982							
10	48.40	.6935							
11	48.20	.6910							
12	48.00	.6882							
13	47.60	.6824							
14	47.30	.6781							
15	46.70	.6695							
PTO	69.75			12.0	030	-18	18	27	289-07
1	07.40	.1061	-0.061						
2	07.20	.1032	-0.069						
4	06.30	.0903	-0.105						
5	04.70	.0674	-0.169						
6	05.00	.0717	-0.157						
7	49.30	.7069							
8	49.20	.7054							
9	49.00	.7025							
10	48.40	.6939							
11	48.00	.6882							
12	47.70	.6839							
13	47.00	.6738							
14	46.40	.6652							
15	45.10	.6466							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,0}	ΔP/q	α _g	φ	DP	P1c	Run	Test
PTO	70.05			16.0	030	-18	19	27	289-07
1	06.50	.0928	-0.098						
2	06.00	.0857	-0.118						
4	01.80	.0257	-0.285						
5	03.10	.0443	-0.233						
6	06.40	.0914	-0.102						
7	50.50	.7209							
8	50.50	.7209							
9	50.50	.7222							
10	49.80	.7109							
11	49.20	.7038							
12	48.90	.6981							
13	47.40	.6767							
14	47.10	.6724							
15	45.50	.6510							
PTO	69.85			20.0	030	-18	20	27	289-07
1	05.90	.0845	-0.121						
2	04.90	.0702	-0.161						
4	01.70	.0243	-0.289						
5	04.20	.0601	-0.189						
6	06.00	.0859	-0.117						
7	52.10	.7459							
8	52.00	.7445							
9	52.40	.7502							
10	51.60	.7387							
11	51.20	.7330							
12	50.90	.7287							
13	50.00	.7158							
14	48.60	.6958							
15	46.20	.6614							
PTO	69.75			23.0	030	-18	21	27	289-07
1	05.20	.0746	-0.148						
2	04.40	.0631	-0.181						
4	01.60	.0229	-0.293						
5	03.50	.0502	-0.217						
6	05.50	.0782	-0.137						
7	53.30	.7542							
8	53.40	.7556							
9	53.20	.7728							
10	52.80	.7584							
11	52.70	.7556							
12	52.60	.7541							
13	51.70	.7412							
14	50.20	.7211							
15	47.80	.6853							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,o}	Δp/q	α _A	φ	DP	Pic	Run	Test
PTO	69.75			00.0	045	-18	22	27	289-07
1	08.50	.1219	-0.016						
2	08.30	.1190	-0.025						
4	08.20	.1175	-0.029						
5	08.10	.1161	-0.032						
6	08.40	.1204	-0.021						
7	49.30	.7068							
8	49.10	.7039							
9	49.20	.7054							
10	49.20	.7054							
11	49.30	.7068							
12	49.30	.7068							
13	49.40	.7082							
14	49.40	.7082							
15	49.40	.7082							
PTO	69.65			04.0	045	-18	23	27	289-07
1	08.50	.1220	-0.016						
2	08.30	.1192	-0.024						
4	08.10	.1163	-0.032						
5	08.00	.1149	-0.036						
6	09.20	.1321	0.012						
7	48.90	.7021							
8	48.90	.7021							
9	48.90	.7021							
10	48.90	.7021							
11	48.90	.7021							
12	48.80	.7006							
13	48.20	.6920							
14	48.60	.6978							
15	48.50	.6963							
PTO	69.40			08.0	045	-18	24	27	289-07
1	08.00	.1153	-0.035						
2	07.60	.1095	-0.051						
4	07.20	.1037	-0.067						
5	06.80	.0980	-0.082						
6	08.40	.1210	-0.019						
7	49.10	.7075							
8	49.00	.7061							
9	48.80	.7032							
10	48.60	.7003							
11	48.60	.7003							
12	48.40	.6974							
13	48.20	.6945							
14	47.80	.6888							
15	47.40	.6830							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α _z	φ	DP	Pic	Run	Test
PTO	69.50			12.0	045	-18	25	27	289-07
1	07.30	.1050	-0.064						
2	06.50	.0935	-0.006						
4	05.10	.0734	-0.152						
5	04.30	.0691	-0.164						
6	06.30	.0906	-0.104						
7	50.30	.7237							
8	50.00	.7194							
9	49.90	.7180							
10	49.40	.7108							
11	49.20	.7079							
12	48.99	.7036							
13	48.60	.6997							
14	48.20	.6935							
15	47.60	.6849							
PTO	69.65			16.0	045	-18	26	27	289-07
1	06.35	.0912	-0.102						
2	05.45	.0782	-0.139						
4	04.05	.0581	-0.195						
5	05.35	.0768	-0.143						
6	06.95	.0998	-0.078						
7	51.85	.7444							
8	51.35	.7373							
9	51.55	.7401							
10	50.85	.7301							
11	50.35	.7301							
12	50.55	.7258							
13	49.65	.7128							
14	49.55	.7114							
15	48.95	.7028							
PTO	69.65			20.0	045	-18	27	27	289-07
1	05.75	.0826	-0.126						
2	04.95	.0711	-0.158						
4	04.45	.0639	-0.179						
5	05.25	.0754	-0.146						
6	06.45	.0926	-0.099						
7	52.45	.7674							
8	52.05	.7617							
9	52.55	.7588							
10	52.95	.7502							
11	52.15	.7531							
12	52.95	.7502							
13	52.55	.7545							
14	51.95	.7459							
15	50.55	.7258							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P_x	$P_x/P_{t,0}$	$\Delta P/q$	α_x	ϕ	DP	Pic	Run	Test
PTO	69.40			23.0	045	-18	28	27	289-07
1	05.15	.0742	-0.150						
2	05.15	.0742	-0.150						
4	04.25	.0612	-0.186						
5	04.95	.0713	-0.158						
6	05.75	.0829	-0.125						
7	54.75	.7889							
8	54.45	.7846							
9	55.15	.7947							
10	54.45	.7846							
11	54.75	.7889							
12	54.75	.7889							
13	54.35	.7831							
14	53.85	.7750							
15	52.55	.7572							
PTO	69.55			00.0	-015	-18	29	27	289-07
1	08.50	.1237	-0.011						
2	08.40	.1208	-0.020						
4	08.40	.1208	-0.020						
5	08.30	.1193	-0.024						
6	08.60	.1237	-0.011						
7	48.50	.6973							
8	48.50	.6973							
9	48.80	.7017							
10	49.00	.7045							
11	49.10	.7060							
12	49.10	.7060							
13	49.00	.7045							
14	49.10	.7060							
15	49.20	.7074							
PTO	69.80			04.0	-015	-18	30	27	289-07
1	08.50	.1237	-0.013						
2	08.50	.1218	-0.017						
4	08.50	.1218	-0.017						
5	08.50	.1218	-0.017						
6	09.90	.1418	0.039						
7	49.10	.7034							
8	49.00	.7020							
9	49.40	.7077							
10	49.20	.7049							
11	49.20	.7049							
12	49.10	.7034							
13	49.10	.7034							
14	49.00	.7020							
15	49.70	.6977							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P_x	$P_x/P_{t,o}$	$\Delta P/q$	α_x	ϕ	HP	Pic	Rum	Test
PTO 69.85				08.0	-015	-18	31	27	289-07
1	08.30	.1187	-0.025						
2	08.30	.1187	-0.025						
4	08.50	.1215	-0.018						
5	08.20	.1172	-0.030						
6	08.60	.1272	0.025						
7	48.80	.6976							
3	48.70	.6962							
9	49.20	.7034							
10	49.10	.7018							
11	49.00	.7005							
12	48.90	.6991							
13	48.70	.6962							
14	48.20	.6891							
15	47.80	.6833							
PTO 69.90				12.0	-015	-18	32	27	289-07
1	07.80	.1116	-0.045						
2	08.00	.1144	-0.037						
4	08.20	.1173	-0.029						
5	07.80	.1116	-0.045						
6	08.70	.1245	-0.009						
7	47.40	.6781							
8	46.90	.6710							
9	48.30	.6910							
10	48.50	.6938							
11	47.70	.6824							
12	47.90	.6853							
13	47.60	.6810							
14	46.50	.6667							
15	45.80	.6552							
PTO 69.90				16.0	-015	-18	33	27	289-07
1	07.20	.1030	-0.069						
2	07.60	.1087	-0.053						
4	05.30	.0758	-0.145						
5	04.20	.0601	-0.180						
6	06.20	.0887	-0.109						
7	46.10	.6595							
8	45.70	.6538							
9	45.40	.6495							
10	43.80	.6266							
11	45.20	.6466							
12	45.50	.6500							
13	44.10	.6300							
14	41.20	.5980							
15	41.00	.5866							

APPENDIX B (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α _x	φ	DP	Pic	Run	Test
PTO	69.80			20.0	-015	-18	34	27	289-07
1	06.60	.0944	-0.093						
2	07.00	.1001	-0.077						
4	01.50	.0215	-0.297						
5	02.70	.0529	-0.209						
6	05.60	.0801	-0.133						
7	44.90	.6423							
8	44.80	.6409							
9	44.10	.6309							
10	42.40	.6066							
11	39.30	.5622							
12	41.30	.5908							
13	40.40	.5730							
14	38.60	.5522							
15	38.00	.5436							
PTO	69.80			22.0	-015	-18	35	27	289-07
1	06.20	.0889	-0.109						
2	06.80	.0974	-0.085						
4	01.40	.0201	-0.301						
5	03.20	.0458	-0.229						
6	05.10	.0731	-0.153						
7	45.10	.6461							
8	45.00	.6447							
9	43.80	.6275							
10	42.20	.6046							
11	38.60	.5530							
12	38.50	.5516							
13	36.60	.5244							
14	37.20	.5330							
15	35.80	.5129							
PTO	69.80			20.0	-030	-18	36	27	289-07
1	08.60	.1232	-0.013						
2	08.40	.1203	-0.021						
4	08.40	.1203	-0.021						
5	08.30	.1189	-0.025						
6	08.60	.1232	-0.013						
7	49.10	.7034							
8	49.40	.7077							
9	49.50	.7092							
10	49.60	.7106							
11	49.50	.7092							
12	49.30	.7063							
13	49.20	.7049							
14	49.30	.7063							
15	49.30	.7063							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M - 2.00

TAP	P _x	P _x /P _{t,o}	Δp/q	α _g	φ	IP	Fic	Run	Test
PTO	69.80			04.0	-030	-18	37	27	289-7
1	08.50	.1218	-0.017						
2	08.50	.1218	-0.017						
4	08.40	.1203	-0.021						
5	08.20	.1180	-0.023						
6	09.60	.1375	0.027						
7	49.50	.7092							
8	49.60	.7106							
9	49.80	.7135							
10	49.70	.7120							
11	49.60	.7106							
12	49.60	.7106							
13	49.50	.7092							
14	49.20	.7040							
15	49.00	.7020							
PTO	69.80			08.0	-030	-18	33	27	289-07
1	08.10	.1160	-0.023						
2	08.20	.1175	-0.029						
4	07.90	.1132	-0.041						
5	07.20	.1032	-0.069						
6	09.00	.1289	0.003						
7	49.10	.7034							
8	49.50	.7106							
9	49.20	.7140							
10	49.70	.7120							
11	49.30	.7063							
12	49.30	.7063							
13	49.30	.7063							
14	48.80	.6991							
15	48.40	.6934							
PTO	69.80			12.0	-030	-18	35	27	289-07
1	07.40	.1050	-0.061						
2	07.70	.1103	-0.049						
4	06.30	.0903	-0.105						
5	04.70	.0672	-0.159						
6	04.90	.0702	-0.161						
7	49.40	.6934							
8	49.10	.7034							
9	49.30	.7063							
10	49.20	.7045							
11	48.30	.6920							
12	48.30	.6920							
13	47.30	.6777							
14	45.80	.6562							
15	33.00	.4857							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,0}	ΔP/q	α _x	φ	DP	P1c	Run	Test
PTO	69.80			16.0	-030	-18	42	27	289-07
1	06.50	.0931	-0.097						
2	07.00	.1003	-0.077						
4	02.00	.0287	-0.277						
5	03.20	.0458	-0.229						
6	06.50	.0931	-0.097						
7	47.50	.6819							
8	48.50	.6048							
9	48.20	.6908							
10	47.20	.6762							
11	44.30	.6433							
12	45.80	.6562							
13	44.30	.6433							
14	44.20	.6347							
15	21.20	.3037							
✓PTO	69.85			20.0	-030	-18	41	27	289-07
1	05.60	.0802	-0.123						
2	06.60	.0945	-0.093						
4	01.90	.0272	-0.281						
5	04.10	.0527	-0.103						
6	06.00	.0850	-0.117						
7	42.10	.6027							
8	44.70	.6399							
9	44.00	.6299							
10	42.60	.6099							
11	40.90	.5855							
12	42.90	.6142							
13	42.10	.6027							
14	37.70	.5397							
15	22.30	.3193							
PTO	69.75			23.0	-030	-18	42	27	289-07
1	04.95	.0710	-0.159						
2	06.55	.0939	-0.095						
4	01.75	.0251	-0.287						
5	03.45	.0495	-0.219						
6	05.35	.0767	-0.143						
7	30.55	.5713							
8	40.45	.5790							
9	41.55	.5957							
10	40.35	.5785							
11	35.05	.5168							
12	37.65	.5398							
13	36.25	.5197							
14	34.25	.4910							
15	22.75	.3262							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,o}	Δp/q	α _z	φ	DP	P1c	Run	Test
PTO	69.80			00.0	-045	-18	43	27	289-07
1	08.55	.1225	-0.015						
2	08.25	.1182	-0.027						
4	08.15	.1168	-0.031						
5	08.15	.1168	-0.031						
6	08.55	.1225	-0.015						
7	49.75	.7120							
8	49.75	.7126							
9	49.65	.7113							
10	49.75	.7122							
11	49.65	.7113							
12	49.55	.7099							
13	49.45	.7085							
14	49.35	.7070							
15	49.25	.7056							
PTO	69.80			04.0	-045	-18	44	27	289-07
1	08.50	.1218	-0.017						
2	08.60	.1232	-0.013						
4	08.30	.1189	-0.025						
5	08.20	.1175	-0.029						
6	09.40	.1347	0.019						
7	50.00	.7163							
8	50.00	.7163							
9	50.10	.7179							
10	50.20	.7192							
11	49.90	.7149							
12	49.80	.7135							
13	49.80	.7135							
14	49.60	.7126							
15	49.60	.7106							
PTO	69.90			08.0	-045	-18	45	27	290-07
1	08.00	.1146	-0.037						
2	08.10	.1160	-0.032						
4	07.50	.1074	-0.057						
5	07.00	.1003	-0.077						
6	08.40	.1203	-0.021						
7	49.90	.7149							
8	50.00	.7163							
9	50.00	.7163							
10	50.10	.7179							
11	49.90	.7149							
12	49.60	.7106							
13	49.70	.7120							
14	49.10	.7034							
15	48.40	.6934							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α _x	φ	DP	Pic	Run	Test
PTO	69.80			12.0	-045	-18	46	27	289-07
1	07.20	.1032	-0.069						
2	07.30	.1046	-0.065						
4	05.30	.0759	-0.145						
5	04.00	.0702	-0.151						
6	06.20	.0888	-0.109						
7	49.40	.7077							
8	49.80	.7135							
9	49.60	.7106							
10	49.30	.7063							
11	49.40	.6924							
12	48.30	.6920							
13	47.00	.6734							
14	43.80	.5275							
15	23.00	.3295							
PTO	69.75			16.0	-045	-18	47	27	289-07
1	06.25	.0836	-0.107						
2	06.65	.0953	-0.091						
4	04.45	.0638	-0.170						
5	05.35	.0767	-0.143						
6	06.95	.0996	-0.070						
7	48.35	.6932							
8	48.75	.6989							
9	47.75	.6846							
10	46.85	.6717							
11	43.85	.6287							
12	42.75	.6129							
13	26.55	.5240							
14	34.05	.4882							
15	26.15	.3749							
PTO	69.75			20.0	-045	-18	48	27	289-07
1	05.60	.0603	-0.133						
2	06.80	.0975	-0.085						
4	05.10	.0731	-0.153						
5	05.10	.0731	-0.153						
6	06.50	.0932	-0.097						
7	45.50	.6523							
8	46.20	.6624							
9	44.30	.6351							
10	42.20	.6050							
11	37.60	.5301							
12	38.80	.5562							
13	37.40	.5362							
14	33.40	.4780							
15	22.10	.3168							

APPENDIX E (CONT'D)
TABLE II OAL TEST 289-7 M = 2.00

TAP	P_x	$P_x/P_{t,0}$	$\Delta P/q$	α_{μ}	ϕ	DP	Pic	Run	Test
PTO	69.75			23.0	-045	-18	43	27	289-07
1	05.10	.0731	-0.153						
2	07.50	.1075	-0.057						
4	05.20	.0746	-0.149						
5	04.60	.0659	-0.173						
6	05.90	.0846	-0.121						
7	41.80	.5993							
8	43.00	.6165							
9	40.40	.5792							
10	37.40	.5362							
11	32.80	.4703							
12	34.90	.5004							
13	34.60	.4961							
14	27.30	.3914							
15	23.80	.3412							
PTO	69.75			23.0	-045	-18	50	27	289-07
1	05.10	.0731	-0.153						
2	07.50	.1075	-0.057						
4	05.20	.0746	-0.149						
5	04.60	.0659	-0.173						
6	05.90	.0846	-0.121						
7	41.80	.5993							
8	43.00	.6165							
9	40.40	.5792							
10	37.40	.5362							
11	32.80	.4703							
12	34.90	.5004							
13	34.60	.4961							
14	27.30	.3914							
15	23.80	.3412							

OAL 289-8

APPENDIX E
TABULATED PRESSURE DATA
TABLE III OAL TEST 289-8 M = 2.00

TAP	P_x	$P_x/P_{t,0}$	$\Delta p/q$	α_x	ϕ	Pic Run	Test
PTO	69.63			00.0	-060.0	1 35	289-08
1	08.43	.1211	-0.019				
2	8.22	.5490	1.177				
4	08.23	.1182	-0.027				
5	08.33	.1199	-0.022				
6	08.73	.1254	-0.007				
7	49.43	.7099					
8	49.53	.7113					
9	49.63	.7128					
10	49.73	.7142					
11	49.83	.7156					
12	49.73	.7142					
13	49.73	.7142					
14	49.63	.7128					
15	49.23	.7070					
PTO	59.33			-04.0	-060.0	2 35	289-08
1	08.03	.1158	-0.034				
2	07.73	.1115	-0.046				
4	07.63	.1101	-0.049				
5	07.53	.1080	-0.054				
6	08.23	.1187	-0.025				
7	49.23	.7101					
8	49.43	.7130					
9	49.33	.7115					
10	49.13	.7086					
11	49.13	.7026					
12	49.03	.7072					
13	48.33	.6971					
14	48.53	.7000					
15	48.03	.7042					
PTC	69.23			00.0	-060.0	3 35	289-08
1	08.13	.1174	-0.020				
2	08.23	.1199	-0.025				
4	07.83	.1131	-0.041				
5	07.63	.1102	-0.049				
6	08.53	.1202	-0.021				
7	49.43	.7140					
8	49.43	.7140					
9	49.53	.7169					
10	49.63	.7169					
11	49.53	.7154					
12	49.63	.7169					
13	49.73	.7183					
14	49.63	.7169					
15	48.83	.7053					

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α _z	φ	Pic Run Test
PTO	69.53			04.0	-060.0	4 35 239-08
1	7.53	.5399	-1.151			
2	07.63	.1097	-0.051			
4	06.93	.0997	-0.079			
5	06.63	.0954	-0.091			
6	08.03	.1155	-0.034			
7	49.63	.7132				
8	49.83	.7167				
9	49.93	.7181				
10	50.03	.7195				
11	49.83	.7167				
12	49.93	.7181				
13	50.13	.7210				
14	50.03	.7195				
15	41.03	.5901				
PTO	69.53			04.0	-060.0	5 35 209-08
1	07.53	.1083	-0.054			
2	07.63	.1097	-0.051			
4	06.93	.0997	-0.079			
5	06.63	.0954	-0.091			
6	08.03	.1155	-0.034			
7	49.63	.7132				
8	49.83	.7167				
9	49.93	.7181				
10	50.03	.7195				
11	49.83	.7167				
12	49.93	.7181				
13	50.13	.7210				
14	50.03	.7195				
15	41.03	.5901				
PTO	69.73			12.0	-060.0	6 35 089-08
1	06.83	.0879	-1.084			
2	06.93	.0894	-1.070			
4	05.83	.0836	-0.124			
5	05.83	.0836	-0.124			
6	08.13	.1166	-0.031			
7	49.53	.7103				
8	49.83	.7146				
9	49.83	.7146				
10	50.03	.7175				
11	49.53	.7103				
12	49.43	.7089				
13	49.73	.7132				
14	49.13	.7046				
15	47.73	.6845				

APPENDIX E (CONT'D)
TABLE III - OAL TEST 289-8 M = 2.00

TAP	P_x	$P_x/P_{t,0}$	$\Delta p/q$	α_z	ϕ	Pic Run Test
PTO	69.68			16.0	-060.0	7 35 289-08
1	06.78	.0973	-0.035			
2	05.28	.0758	-0.145			
4	04.88	.0700	-0.162			
5	04.88	.0700	-0.162			
6	06.22	.0901	-0.105			
7	48.98	.7029				
8	49.38	.7027				
9	49.08	.7044				
10	49.89	.7015				
11	47.78	.6857				
12	47.68	.6843				
13	45.32	.6512				
14	40.18	.5766				
15	40.28	.5795				
PTO	69.58			20.0	-060.0	8 35 289-08
1	07.08	.1018	-0.073			
2	05.18	.0744	-0.149			
4	04.98	.0716	-0.157			
5	05.08	.0730	-0.153			
6	05.32	.0772	-0.141			
7	47.98	.6921				
8	48.02	.6930				
9	47.48	.6824				
10	46.68	.6702				
11	42.08	.6046				
12	25.68	.3691				
13	18.48	.2656				
14	20.78	.2986				
15	37.18	.5243				
PTO	69.63			23.0	-075.0	9 35 289-08
1	07.42	.1067	-0.050			
2	05.73	.0823	-0.127			
4	05.03	.0722	-0.155			
5	05.53	.0794	-0.135			
6	05.03	.0722	-0.155			
7	47.03	.6754				
8	47.23	.6783				
9	45.23	.6552				
10	40.13	.5763				
11	20.73	.2977				
12	16.53	.2376				
13	14.83	.2146				
14	17.03	.2446				
15	33.73	.4844				

APPENDIX E (CONT'D)
TABLE III. OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α _z	φ	Pic Run	Test
PTO	69.73			-04.0	-075.0	10 35	289-08
1	08.13	.1166	-0.031				
2	07.83	.1123	-0.043				
4	07.63	.1094	-0.051				
5	07.63	.1094	-0.051				
6	08.33	.1195	-0.023				
7	49.53	.7102					
8	49.73	.7132					
9	49.63	.7117					
10	49.43	.7080					
11	49.43	.7080					
12	49.33	.7074					
13	48.53	.6960					
14	48.83	.7003					
15	49.03	.7031					
PTO	69.68			-04.0	-060.0	11 35	289-08
1	08.23	.1181	-0.027				
2	07.83	.1124	-0.043				
4	07.73	.1100	-0.047				
5	07.73	.1100	-0.047				
6	08.43	.1210	-0.019				
7	49.63	.7122					
8	49.53	.7151					
9	49.53	.7108					
10	49.33	.7080					
11	49.23	.7065					
12	49.13	.7051					
13	48.03	.6903					
14	48.73	.6963					
15	48.93	.7022					
PTO	69.73			00.0	-060.0	12 35	289-08
1	08.33	.1195	-0.023				
2	08.23	.1180	-0.027				
4	08.13	.1166	-0.031				
5	08.23	.1180	-0.027				
6	08.63	.1232	-0.011				
7	49.63	.7117					
8	49.73	.7132					
9	49.63	.7165					
10	49.93	.7160					
11	49.83	.7146					
12	49.73	.7132					
13	49.73	.7132					
14	49.53	.7103					
15	48.93	.7017					

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	$\Delta p/q$	α_z	ϕ	Pic	Run	Test
PTO	69.73			04.0	-060.0	13	35	289-08
1	08.33	.1195	-0.023					
2	08.33	.1195	-0.023					
4	07.93	.1137	-0.030					
5	07.93	.1122	-0.042					
6	08.73	.1252	-0.007					
7	49.73	.7132						
8	49.93	.7160						
9	50.03	.7175						
10	50.03	.7175						
11	50.03	.7175						
12	50.03	.7175						
13	49.73	.7132						
14	49.83	.7146						
15	49.53	.7102						
PTO	69.73			08.0	-060.0	14	35	289-08
1	07.23	.1123	-0.043					
2	08.03	.1152	-0.035					
4	07.43	.1066	-0.059					
5	07.03	.1008	-0.075					
6	08.73	.1252	-0.007					
7	49.83	.7146						
8	49.93	.7160						
9	50.03	.7175						
10	50.03	.7175						
11	49.83	.7146						
12	50.03	.7175						
13	49.83	.7146						
14	49.53	.7102						
15	32.63	.4679						
PTO	69.68			12.0	-060.0	15	35	289-08
1	07.08	.1016	-0.073					
2	07.08	.1016	-0.073					
4	05.98	.0844	-0.121					
5	05.98	.0858	-0.117					
6	07.78	.1117	-0.045					
7	49.38	.7037						
8	49.58	.7115						
9	49.58	.7115						
10	49.58	.7115						
11	48.58	.6996						
12	48.98	.7020						
13	47.78	.6957						
14	45.18	.6484						
15	17.88	.2566						

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,o}	Δp/q	α _z	φ	Pic Run Test
PTO	69.63			16.0	-060.0	16 35 289-08
1	06.93	.0995	-0.079			
2	06.03	.0866	-0.115			
4	05.63	.0800	-0.131			
5	05.03	.0722	-0.155			
6	07.03	.1010	-0.075			
7	48.33	.6941				
8	48.73	.6999				
9	48.23	.6927				
10	47.63	.6840				
11	45.33	.5510				
12	44.03	.6323				
13	22.53	.3250				
14	11.03	.1524				
15	30.43	.4370				
PTO	69.68			20.0	-060.0	17 35 289-08
1	06.48	.0930	-0.097			
2	05.38	.0772	-0.141			
4	05.18	.0743	-0.150			
5	04.48	.0642	-0.177			
6	05.88	.0864	-0.121			
7	45.98	.6509				
8	46.18	.6627				
9	44.38	.6369				
10	41.18	.5910				
11	27.58	.3958				
12	20.98	.3011				
13	12.68	.1820				
14	16.48	.2265				
15	37.98	.5451				
PTO	69.78			23.0	-060.0	18 35 289-08
1	06.08	.1000	-0.078			
2	05.88	.0843	-0.122			
4	05.48	.0785	-0.138			
5	04.48	.0642	-0.178			
6	05.08	.0722	-0.154			
7	42.78	.6131				
8	42.28	.6059				
9	36.38	.5214				
10	29.58	.4230				
11	18.08	.2591				
12	17.38	.2491				
13	17.38	.2491				
14	13.98	.2003				
15	34.78	.4984				

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α _h	φ	Pic	Run	Test
PTO	69.58			08.0	-060.0	19	35	289-08
1	07.78	.1112	-0.045					
2	07.88	.1133	-0.041					
4	07.28	.1046	-0.065					
5	06.88	.0889	-0.081					
6	08.58	.1233	-0.013					
7	49.68	.7140						
8	49.78	.7154						
9	49.88	.7160						
10	49.98	.7183						
11	49.68	.7140						
12	49.98	.7183						
13	49.68	.7140						
14	49.38	.7007						
15	31.58	.4539						
PTO	69.91			00.0	-090.0	1	36	289-08
1	08.21	.1174	-0.029					
2	08.11	.1160	-0.033					
4	08.21	.1174	-0.029					
5	08.21	.1174	-0.029					
6	08.71	.1246	-0.009					
7	49.51	.7082						
8	49.61	.7096						
9	49.71	.7111						
10	49.91	.7125						
11	49.91	.7139						
12	49.81	.7125						
13	49.91	.7139						
14	49.81	.7125						
15	49.61	.7096						
PTO	69.91			-04.0	-090.0	2	36	289-08
1	08.11	.1160	-0.033					
2	07.91	.1131	-0.041					
4	07.71	.1103	-0.049					
5	07.71	.1103	-0.049					
6	08.31	.1189	-0.025					
7	49.61	.7096						
8	49.71	.7111						
9	49.61	.7096						
10	49.41	.7068						
11	49.41	.7068						
12	49.31	.7053						
13	48.71	.6068						
14	49.11	.7025						
15	49.31	.7053						

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	ΔP/q	α _L	φ	Pic Run Test
PTO	69.86			00.0	-090.0	3 36 282-08
1	08.26	.1132	-0.027			
2	08.16	.1168	-0.031			
4	08.16	.1168	-0.031			
5	08.16	.1168	-0.031			
6	08.66	.1240	-0.011			
7	49.46	.7080				
8	49.56	.7094				
9	49.66	.7109				
10	49.76	.7123				
11	49.86	.7137				
12	49.76	.7123				
13	49.76	.7123				
14	49.66	.7109				
15	49.46	.7080				
PTO	69.86			04.0	-090.0	4 36 282-08
1	07.96	.1139	-0.029			
2	08.06	.1154	-0.035			
4	07.96	.1139	-0.039			
5	07.76	.1111	-0.047			
6	08.26	.1182	-0.027			
7	49.86	.7137				
8	49.76	.7123				
9	49.86	.7137				
10	49.86	.7137				
11	49.86	.7137				
12	49.86	.7137				
13	50.06	.7166				
14	50.06	.7166				
15	49.16	.7037				
PTO	69.86			08.0	-090.0	5 36 282-08
1	07.26	.1052	-0.063			
2	07.26	.1038	-0.067			
4	06.86	.0981	-0.083			
5	06.26	.0909	-0.103			
6	07.26	.1038	-0.067			
7	49.96	.7141				
8	50.06	.7156				
9	50.06	.7156				
10	50.06	.7156				
11	50.06	.7156				
12	50.16	.7170				
13	50.46	.7212				
14	50.56	.7227				
15	49.66	.7098				

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	$\Delta p/q$	α_2	ϕ	Pic Run Test
PTO	69.96			12.0	-090.0	6 36 289-08
1	07.06	.1029	-0.075			
2	06.66	.0952	-0.091			
4	06.36	.0909	-0.103			
5	06.06	.0866	-0.115			
6	07.56	.1081	-0.065			
7	40.96	.7141				
8	50.06	.7156				
9	50.06	.7156				
10	50.16	.7170				
11	50.06	.7156				
12	50.46	.7213				
13	49.26	.7141				
14	50.46	.7213				
15	49.96	.7127				
PTO	69.86			16.0	-090.0	7 36 289-08
1	07.46	.1068	-0.059			
2	05.96	.0853	-0.119			
4	04.76	.0681	-0.167			
5	05.16	.0739	-0.151			
6	05.56	.0796	-0.135			
7	49.66	.7109				
8	48.96	.7151				
9	49.26	.7137				
10	50.26	.7166				
11	49.46	.7090				
12	49.16	.7027				
13	47.76	.6837				
14	45.56	.6522				
15	43.86	.6278				
PTO	69.86			20.0	-090.0	8 36 289-08
1	07.66	.1096	-0.051			
2	05.96	.0853	-0.119			
4	04.96	.0710	-0.159			
5	05.06	.0724	-0.155			
6	04.26	.0610	-0.187			
7	49.26	.7137				
8	49.76	.7122				
9	49.26	.7066				
10	49.26	.7051				
11	48.06	.6870				
12	45.26	.6470				
13	37.66	.5391				
14	39.76	.4402				
15	36.16	.5176				

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 $M = 2.00$

TAP	P_x	$P_x/P_{t,0}$	$\Delta p/q$	α_f	ϕ	Pic	Run	Test
PTO	69.81			23.0	-090.0	9	36	289-02
1	08.21	.1176	-0.029					
2	06.11	.0875	-0.113					
4	05.51	.0789	-0.137					
5	05.51	.0789	-0.137					
6	04.01	.0574	-0.197					
7	49.81	.6892						
8	49.21	.7049						
9	49.11	.7035						
10	48.11	.6892						
11	43.21	.6190						
12	35.21	.5044						
13	25.31	.3626						
14	20.41	.2824						
15	33.61	.4814						
PTO	69.81			12.0	-090.0	10	36	289-03
1	07.16	.1026	-0.070					
2	06.66	.0954	-0.001					
4	06.26	.0887	-0.106					
5	06.06	.0868	-0.115					
6	07.86	.1083	-0.054					
7	49.86	.7142						
8	50.06	.7171						
9	49.96	.7157						
10	50.15	.7189						
11	49.96	.7157						
12	50.26	.7200						
13	49.86	.7142						
14	50.36	.7214						
15	49.76	.7123						
PTO	70.16			00.0	-090.0	11	36	289-04
1	08.46	.1206	-0.020					
2	08.16	.1168	-0.032					
4	08.26	.1177	-0.028					
5	08.26	.1177	-0.028					
6	08.76	.1248	-0.008					
7	49.66	.7078						
8	49.66	.7078						
9	49.76	.7082						
10	49.86	.7107						
11	50.06	.7135						
12	49.96	.7121						
13	49.96	.7121						
14	49.86	.7107						
15	49.66	.7078						

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	$\Delta p/q$	α_x	ϕ	Pic	Run	Test
PTO	69.96			00.0	-105.0	12	36	289-08
1	08.46	.1209	-0.019					
2	08.26	.1181	-0.027					
4	08.26	.1181	-0.027					
5	08.26	.1181	-0.027					
6	08.66	.1238	-0.011					
7	49.56	.7084						
8	49.66	.7098						
9	49.66	.7098						
10	49.86	.7097						
11	49.96	.7141						
12	49.76	.7112						
13	49.86	.7127						
14	49.86	.7127						
15	49.46	.7070						
PTO	69.91			-04.0	-105.0	13	36	289-08
1	08.31	.1189	-0.025					
2	08.01	.1146	-0.037					
4	07.81	.1117	-0.045					
5	07.71	.1103	-0.049					
6	08.51	.1217	-0.017					
7	49.51	.7082						
8	49.61	.7096						
9	49.51	.7082						
10	49.31	.7053						
11	49.31	.7053						
12	49.31	.7053						
13	48.41	.6925						
14	48.01	.7010						
15	48.31	.7053						
PTO	69.86			04.0	-105.0	14	36	289-08
1	07.86	.1139	-0.039					
2	07.86	.1139	-0.039					
4	07.76	.1111	-0.047					
5	07.66	.1096	-0.051					
6	08.16	.1168	-0.031					
7	49.76	.7122						
8	49.76	.7123						
9	49.86	.7137						
10	49.96	.7137						
11	49.76	.7122						
12	49.86	.7137						
13	49.86	.7151						
14	49.86	.7151						
15	49.46	.7080						

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,o}	ΔP/q	α _g	φ	Pic	Rm	Test
PTO	69.86			98.0	-105.0	15	36	289-09
1	07.56	.1082	-0.055					
2	07.26	.1032	-0.067					
4	06.76	.0963	-0.087					
5	06.26	.0896	-0.107					
6	07.06	.1011	-0.075					
7	49.96	.7151						
8	49.96	.7151						
9	49.96	.7151						
10	50.06	.7166						
11	49.96	.7151						
12	49.96	.7151						
13	50.06	.7166						
14	49.96	.7151						
15	41.26	.5920						
PTO	69.86			12.0	-105.0	16	36	289-08
1	07.46	.1066	-0.059					
2	06.86	.0981	-0.083					
4	05.46	.0780	-0.139					
5	05.06	.0723	-0.155					
6	05.16	.0738	-0.151					
7	49.96	.7141						
8	50.06	.7156						
9	49.86	.7127						
10	50.06	.7156						
11	49.66	.7098						
12	49.36	.7055						
13	49.86	.6994						
14	49.06	.7013						
15	48.16	.6924						
PTO	69.86			16.0	-105.0	17	36	289-09
1	07.86	.1123	-0.043					
2	07.06	.1002	-0.075					
4	05.46	.0780	-0.139					
5	05.16	.0738	-0.151					
6	04.76	.0680	-0.167					
7	49.46	.7070						
8	49.56	.7084						
9	49.06	.7013						
10	49.16	.7027						
11	48.06	.6870						
12	47.66	.6812						
13	44.66	.6304						
14	37.66	.5383						
15	40.56	.5798						

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α _z	φ	Pic Run	Test
PTO	69.91			20.0	-105.0	13 36	289-08
1	08.41	.1203	-0.021				
2	07.11	.1017	-0.073				
4	05.91	.0845	-0.121				
5	05.71	.0817	-0.122				
6	04.81	.0623	-0.165				
7	42.61	.6053					
8	48.41	.6925					
9	47.11	.6730					
10	46.81	.6696					
11	41.71	.5966					
12	24.31	.3477					
13	14.31	.2047					
14	17.51	.2505					
15	37.21	.5323					
PTO	69.86			23.0	-105.0	18 36	289-08
1	08.76	.1254	-0.007				
2	07.46	.1068	-0.059				
4	06.56	.0939	-0.095				
5	06.16	.0882	-0.111				
6	04.96	.0710	-0.150				
7	47.66	.6922					
8	47.26	.6765					
9	44.66	.6293					
10	39.96	.5720					
11	21.26	.3243					
12	15.06	.2156					
13	12.56	.1798					
14	14.86	.2127					
15	32.36	.4775					
PTO	70.16			12.0	-105.0	20 36	289-08
1	07.76	.1106	-0.042				
2	06.96	.0992	-0.090				
4	05.36	.0764	-0.144				
5	05.16	.0725	-0.152				
6	04.36	.0593	-0.163				
7	40.76	.7092					
8	40.96	.7121					
9	49.46	.7050					
10	49.66	.7070					
11	43.36	.6064					
12	48.56	.6921					
13	47.06	.6708					
14	46.06	.6280					
15	43.36	.6180					

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α _z	φ	Pic	Run	Test
PTO	69.96			12.0	-105.0	21	36	289-08
1	07.46	.1066	-0.053					
2	06.86	.0981	-0.083					
4	05.46	.0780	-0.139					
5	04.96	.0709	-0.159					
6	05.16	.0732	-0.151					
7	49.96	.7141						
8	50.06	.7156						
9	49.86	.7127						
10	50.06	.7156						
11	49.66	.7098						
12	49.36	.7055						
13	49.86	.6924						
14	49.06	.7012						
15	48.16	.6924						
PTO	70.16			00.0	-105.0	22	36	289-09
1	08.26	.1192	-0.024					
2	08.26	.1177	-0.028					
4	08.26	.1177	-0.028					
5	08.26	.1177	-0.023					
6	08.66	.1234	-0.012					
7	49.66	.7078						
8	49.66	.7078						
9	49.76	.7092						
10	49.96	.7121						
11	49.86	.7107						
12	49.96	.7107						
13	49.96	.7121						
14	49.96	.7121						
15	49.46	.7050						
PTO	69.96			00.0	-120.0	23	36	289-03
1	08.56	.1224	-0.015					
2	09.26	.1181	-0.027					
4	08.26	.1181	-0.027					
5	08.26	.1181	-0.027					
6	08.66	.1230	-0.011					
7	49.46	.7070						
8	49.56	.7084						
9	49.76	.7113						
10	49.96	.7141						
11	49.96	.7127						
12	49.76	.7113						
13	49.86	.7127						
14	49.66	.7098						
15	49.26	.7041						

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	$\Delta P/q$	α_E	ϕ	Pic	Run	Test
PTO	69.96			-04.0	-120.0	24	36	289-08
1	08.46	.1209	-0.019					
2	07.96	.1138	-0.032					
4	07.96	.1138	-0.039					
5	07.86	.1123	-0.043					
6	08.86	.1266	-0.003					
7	49.65	.7098						
8	49.76	.7113						
9	49.56	.7084						
10	49.46	.7070						
11	49.46	.7070						
12	49.16	.7027						
13	48.16	.6834						
14	49.06	.7013						
15	49.26	.7061						
PTO	69.96			04.0	-120.0	25	36	289-08
1	08.16	.1166	-0.031					
2	07.96	.1138	-0.039					
4	07.96	.1138	-0.039					
5	07.76	.1109	-0.047					
6	08.26	.1181	-0.027					
7	49.76	.7113						
8	49.86	.7127						
9	49.86	.7127						
10	49.96	.7141						
11	50.06	.7156						
12	50.06	.7156						
13	49.96	.7127						
14	49.86	.7127						
15	49.66	.7098						
PTO	69.81			08.0	-120.0	26	36	289-08
1	07.71	.1104	-0.040					
2	07.41	.1061	-0.061					
4	06.91	.0990	-0.080					
5	06.41	.0918	-0.101					
6	07.21	.1033	-0.060					
7	49.91	.7135						
8	49.91	.7140						
9	49.81	.7135						
10	49.91	.7140						
11	49.81	.7135						
12	49.91	.7135						
13	49.71	.7121						
14	49.91	.7063						
15	43.91	.4857						

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,o}	Δp/q	α _z	φ	Pic Run	Test
PTO	70.11			12.0	-120.0	27 36	289-07
1	07.71	.1100	-0.050				
2	07.31	.1043	-0.066				
4	06.31	.0900	-0.106				
5	05.71	.0814	-0.130				
6	06.41	.0914	-0.102				
7	49.81	.7105					
8	49.81	.7105					
9	49.41	.7047					
10	49.61	.7076					
11	49.01	.6990					
12	48.81	.6962					
13	47.51	.6770					
14	44.71	.6377					
15	17.71	.2526					
PTO	70.16			16.0	-120.0	28 36	289-08
1	08.11	.1156	-0.024				
2	07.61	.1085	-0.054				
4	06.41	.0914	-0.102				
5	06.11	.0871	-0.114				
6	06.61	.0942	-0.094				
7	49.21	.7014					
8	49.01	.6985					
9	48.01	.6842					
10	48.11	.6857					
11	46.21	.6601					
12	44.21	.6301					
13	27.51	.3200					
14	09.81	.1300					
15	27.61	.3035					
PTO	70.15			20.0	-120.0	29 36	289-09
1	08.31	.1256	-0.006				
2	08.41	.1109	-0.022				
4	06.91	.0985	-0.082				
5	05.81	.0871	-0.086				
6	07.11	.1012	-0.074				
7	47.01	.6700					
8	46.21	.6601					
9	43.41	.6187					
10	41.21	.5928					
11	30.91	.4406					
12	22.11	.3151					
13	17.41	.2481					
14	18.01	.2567					
15	32.21	.5446					

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	$\Delta P/q$	α_x	ϕ	Pic Run Test
PTO	70.01			22.0	-120.0	30 36 289-08
1	09.46	.1351	0.020			
2	08.86	.1266	-0.003			
4	07.56	.1080	-0.055			
5	07.46	.1066	-0.059			
6	07.56	.1080	-0.055			
7	43.86	.6279				
8	41.66	.5951				
9	35.06	.5009				
10	30.86	.4422				
11	22.76	.3251				
12	18.66	.2665				
13	21.66	.3086				
14	14.76	.2102				
15	32.86	.4836				
PTO	70.16			12.0	-120.0	31 36 289-08
1	07.71	.1099	-0.050			
2	07.31	.1042	-0.066			
4	06.31	.0890	-0.106			
5	05.71	.0814	-0.130			
6	06.41	.0914	-0.102			
7	49.91	.7114				
8	49.91	.7114				
9	49.61	.7071				
10	49.71	.7085				
11	49.01	.6995				
12	49.31	.6957				
13	47.51	.6772				
14	44.61	.6353				
15	17.31	.2467				
PTO	69.96			00.0	-120.0	32 36 289-08
1	08.46	.1209	-0.010			
2	08.16	.1166	-0.031			
4	08.26	.1181	-0.027			
5	08.26	.1181	-0.027			
6	08.66	.1238	-0.011			
7	49.46	.7070				
8	49.66	.7090				
9	49.86	.7127				
10	49.96	.7141				
11	49.36	.7127				
12	49.86	.7127				
13	49.86	.7127				
14	49.76	.7113				
15	49.26	.7041				

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	ΔP/q	α _z	φ	Pic Run Test
PTO	69.91			00.0	-135.0	33 26 289-03
1	08.51	.1217	-0.017			
2	08.21	.1174	-0.029			
4	08.21	.1174	-0.029			
5	08.21	.1174	-0.029			
6	08.71	.1246	-0.009			
7	49.51	.7082				
8	49.71	.7111				
9	49.81	.7125				
10	49.81	.7125				
11	49.71	.7111				
12	49.61	.7096				
13	49.41	.7068				
14	49.31	.7053				
15	49.21	.7039				
PTO	69.91			04.0	-135.0	34 36 289-03
1	08.31	.1199	-0.025			
2	08.11	.1160	-0.033			
4	08.01	.1146	-0.037			
5	07.91	.1131	-0.041			
6	08.41	.1203	-0.021			
7	49.61	.7096				
8	49.81	.7125				
9	49.81	.7125				
10	50.01	.7153				
11	49.91	.7139				
12	49.81	.7125				
13	49.71	.7111				
14	49.61	.7096				
15	49.61	.7096				
PTO	69.96			08.0	-135.0	35 26 289-03
1	07.86	.1123	-0.043			
2	07.66	.1095	-0.051			
4	07.36	.1052	-0.063			
5	06.96	.0995	-0.079			
6	07.76	.1109	-0.047			
7	49.56	.7024				
8	49.66	.7099				
9	49.56	.7084				
10	49.86	.7127				
11	49.76	.7113				
12	49.36	.7055				
13	49.56	.7084				
14	48.86	.6984				
15	47.16	.6741				

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α ₂	φ	Pic	Run	Test
PTO	69.96			12.0	-135.0	36	36	289-08
1	07.86	.1123	-0.043					
2	07.56	.1081	-0.055					
4	07.06	.1009	-0.075					
5	06.66	.0952	-0.091					
6	07.66	.1035	-0.051					
7	49.46	.7070						
8	49.36	.7055						
9	48.86	.6984						
10	48.96	.6998						
11	48.16	.6884						
12	47.96	.6855						
13	46.46	.6641						
14	43.06	.6156						
15	21.76	.3110						
PTO	69.96			16.0	-135.0	37	36	289-08
1	08.36	.1195	-0.023					
2	07.86	.1123	-0.043					
4	07.36	.1052	-0.063					
5	07.16	.1023	-0.071					
6	08.36	.1195	-0.023					
7	48.76	.6870						
8	48.36	.6812						
9	46.66	.6670						
10	46.76	.6684						
11	44.46	.6256						
12	42.56	.6086						
13	37.36	.5240						
14	34.06	.4868						
15	23.56	.3656						
PTO	69.96			20.0	-125.0	38	36	289-08
1	09.06	.1295	0.006					
2	08.46	.1209	-0.019					
4	08.06	.1152	-0.035					
5	08.06	.1152	-0.035					
6	09.26	.1324	0.013					
7	46.76	.6824						
8	45.86	.6556						
9	42.76	.6112						
10	42.06	.6012						
11	39.06	.5623						
12	38.76	.5640						
13	38.16	.5455						
14	32.96	.4711						
15	21.46	.3067						

APPENDIX E (CONT'D)
TABLE III OAL TEST 289-8 M = 2.00

TAP	P _x	P _x /P _{t,0}	$\Delta P/q$	α_z	ϕ	Pic	Run	Test
PTO	62.96			23.0	-135.0	39	36	289-08
1	09.96	.1424	0.041					
2	09.06	.1295	0.005					
4	08.86	.1266	-0.003					
5	08.86	.1266	-0.003					
6	10.16	.1452	0.049					
7	43.96	.6234						
8	42.56	.6083						
9	37.06	.5297						
10	37.76	.5397						
11	34.86	.4933						
12	34.76	.4960						
12	35.16	.5026						
14	26.76	.3525						
15	23.56	.3363						
PTO	70.11			12.0	-135.0	40	36	289-08
1	08.01	.1142	-0.030					
2	07.61	.1085	-0.054					
4	07.11	.1014	-0.074					
5	06.71	.0957	-0.090					
6	07.71	.1100	-0.050					
7	40.61	.7076						
8	40.51	.7062						
9	40.01	.6976						
10	40.01	.6930						
11	40.21	.6976						
12	40.01	.6940						
13	46.41	.6620						
14	42.01	.6120						
15	21.51	.3068						
PTO	70.06			20.0	-135.0	41	36	289-08
1	08.46	.1208	-0.020					
2	08.26	.1170	-0.028					
4	08.26	.1170	-0.028					
5	08.26	.1170	-0.028					
6	08.66	.1236	-0.012					
7	40.66	.7088						
8	40.76	.7102						
9	40.86	.7117						
10	40.86	.7117						
11	40.76	.7102						
12	40.56	.7074						
13	40.46	.7060						
14	40.36	.7045						
15	40.36	.7045						

OAL 289-10

APPENDIX E
TABULATED PRESSURE DATA
TABLE IV OAL TEST 289-10 M = 2.00

TAP	p_x	$p_x/p_{t,0}$	$\Delta p/q$	α_x	ϕ	Pic Run	Test
PTO	72.33			20.0	000.0	1 29	289-10
1	09.18	.1269	-0.002				
2	08.68	.1200	-0.022				
4	08.88	.1228	-0.014				
5	08.69	.1222	-0.014				
6	09.03	.1255	-0.006				
7	50.48	.6979					
8	49.88	.6896					
9	50.18	.6922					
10	50.68	.7007					
11	50.78	.7021					
12	50.78	.7021					
13	50.78	.7021					
14	50.08	.7043					
15	51.08	.7062					
PTO	72.13			20.0	000.0	2 29	289-10
1	09.08	.1259	-0.005				
2	08.68	.1203	-0.021				
4	08.88	.1231	-0.013				
5	08.88	.1231	-0.013				
6	09.03	.1250	-0.005				
7	50.28	.6971					
8	49.68	.6888					
9	50.03	.6943					
10	50.43	.6998					
11	50.68	.7026					
12	50.62	.7026					
13	50.68	.7026					
14	50.78	.7040					
15	50.88	.7054					
PTO	72.13			21.0	145.0	3 29	289-10
1	09.08	.1250	-0.005				
2	08.68	.1202	-0.021				
4	08.88	.1231	-0.013				
5	08.68	.1203	-0.021				
6	08.88	.1231	-0.013				
7	50.82	.7054					
8	50.82	.7026					
9	50.68	.7026					
10	50.68	.7026					
11	50.82	.7054					
12	50.88	.7054					
13	50.82	.7060					
14	50.98	.7068					
15	50.98	.7062					

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	P_x	$P_x/P_{t,0}$	$\Delta p/q$	α_x	ϕ	Pic Run	Test
PTO	72.38			80.0	-045.3	4 29	289-10
1	08.08	.1254	-0.007				
2	08.68	.1199	-0.022				
4	08.88	.1227	-0.014				
5	08.68	.1199	-0.022				
6	08.98	.1241	-0.010				
7	51.38	.7000					
8	51.48	.7112					
9	51.28	.7085					
10	51.38	.7000					
11	51.48	.7112					
12	51.38	.7000					
13	51.28	.7000					
14	51.28	.7085					
15	50.08	.7043					
PTO	72.28			80.0	-090.0	5 29	289-10
1	08.68	.1200	-0.021				
2	08.28	.1146	-0.037				
4	08.68	.1200	-0.021				
5	08.68	.1200	-0.021				
6	08.88	.1220	-0.014				
7	51.28	.7100					
8	51.38	.7112					
9	51.28	.7100					
10	51.48	.7127					
11	51.68	.7155					
12	51.48	.7127					
13	51.38	.7113					
14	51.38	.7112					
15	51.28	.7112					
PTO	72.28			84.0	-035.0	6 29	289-10
1	08.08	.1256	-0.006				
2	08.68	.1201	-0.021				
4	08.28	.1220	-0.014				
5	08.58	.1107	-0.025				
6	08.98	.1381	0.022				
7	51.18	.7000					
8	51.48	.7122					
9	51.48	.7122					
10	51.28	.7085					
11	51.38	.7100					
12	51.28	.7085					
13	51.28	.7085					
14	51.18	.7081					
15	51.08	.7067					

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M-2-00

TAP	P _x	P _x /P _{t,0}	$\Delta p/q$	α_z	ϕ	Pic Run Test
PTO	72.18			04.0	-040.0	7 29 289-10
1	08.98	.1244	-0.009			
2	08.68	.1203	-0.021			
4	08.88	.1230	-0.013			
5	08.48	.1175	-0.029			
6	09.88	.1369	0.025			
7	51.28	.7104				
8	51.48	.7132				
9	51.58	.7146				
10	51.43	.7132				
11	51.38	.7118				
12	51.38	.7118				
13	51.28	.7104				
14	51.18	.7091				
15	51.18	.7091				
PTO	72.18			04.0	-050.0	8 29 289-10
1	08.98	.1230	-0.013			
2	08.68	.1203	-0.021			
4	08.78	.1216	-0.017			
5	08.38	.1161	-0.033			
6	09.38	.1200	0.006			
7	51.48	.7132				
8	51.38	.7118				
9	51.58	.7146				
10	51.63	.7160				
11	51.73	.7174				
12	51.48	.7132				
13	51.38	.7118				
14	51.38	.7118				
15	51.18	.7091				
PTO	71.98			04.0	-055.0	9 29 289-10
1	08.88	.1234	-0.012			
2	08.58	.1192	-0.024			
4	08.68	.1206	-0.020			
5	08.28	.1150	-0.036			
6	09.18	.1275	-0.001			
7	51.28	.7124				
8	51.18	.7110				
9	51.43	.7152				
10	51.43	.7152				
11	51.58	.7166				
12	51.58	.7166				
13	51.28	.7124				
14	51.38	.7138				
15	51.08	.7096				

APPENDIX E (CONT'D)

TABLE IV OAL TEST 239-10 M - 2.00

TAP	P_x	$P_x/P_{t,0}$	$\Delta P/q$	α_z	ϕ	Pic Run	Test
PTO	71.48			04.0	-060.0	10	29 289-10
1	08.68	.1214	-0.018				
2	08.38	.1172	-0.030				
4	08.48	.1186	-0.026				
5	08.18	.1144	-0.037				
6	08.93	.1242	-0.010				
7	51.08	.7146					
8	51.08	.7146					
9	51.03	.7146					
10	51.18	.7160					
11	51.28	.7174					
12	51.38	.7189					
13	51.08	.7146					
14	51.18	.7160					
15	50.98	.7110					
PTO	71.38			04.0	-065.0	11	29 289-11
1	08.73	.1223	-0.015				
2	08.33	.1167	-0.031				
4	08.43	.1181	-0.027				
5	08.13	.1139	-0.039				
6	08.73	.1223	-0.015				
7	51.03	.7149					
8	51.03	.7149					
9	51.13	.7163					
10	51.13	.7163					
11	51.23	.7177					
12	51.23	.7177					
13	51.23	.7177					
14	51.13	.7163					
15	50.83	.7121					
PTO	71.53			04.0	-070.0	12	29 289-12
1	08.58	.1180	-0.022				
2	08.28	.1150	-0.033				
4	08.38	.1172	-0.030				
5	07.08	.1116	-0.045				
6	08.68	.1213	-0.013				
7	51.08	.7141					
8	51.08	.7141					
9	51.18	.7155					
10	51.18	.7155					
11	51.18	.7155					
12	51.28	.7169					
13	51.28	.7169					
14	51.28	.7169					
15	50.88	.7113					

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	P _x	P _x /P _{t,o}	$\Delta P/q$	α_z	ϕ	Pic Run Test
PTO	71.43			04.0	-150.0	13 29 280-10
1	08.58	.1201	-0.021			
2	08.18	.1145	-0.037			
4	08.48	.1187	-0.025			
5	08.18	.1145	-0.037			
6	08.68	.1215	-0.018			
7	50.68	.7095				
8	50.58	.7091				
9	50.48	.7067				
10	50.48	.7067				
11	50.58	.7091				
12	50.48	.7067				
13	50.48	.7067				
14	50.39	.7053				
15	50.28	.7039				
PTO	71.23			04.0	-155.0	14 29 290-10
1	08.58	.1205	-0.020			
2	08.28	.1162	-0.032			
4	08.58	.1205	-0.020			
5	08.33	.1176	-0.020			
6	08.78	.1230	-0.012			
7	49.99	.7003				
8	50.08	.7031				
9	50.08	.7031				
10	49.99	.7017				
11	49.99	.7017				
12	49.99	.7003				
13	49.78	.6980				
14	49.78	.6977				
15	49.68	.6975				
PTO	70.93			04.0	-150.0	15 29 200-10
1	08.48	.1196	-0.023			
2	08.18	.1153	-0.035			
4	08.48	.1196	-0.023			
5	08.48	.1196	-0.023			
6	08.68	.1252	-0.007			
7	49.38	.6962				
8	49.48	.6976				
9	49.48	.6976				
10	49.48	.6976				
11	49.58	.6990				
12	49.58	.6990				
13	49.58	.6990				
14	49.58	.6990				
15	49.38	.6962				

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	P _x	P _x /P _{t,0}	$\Delta P/q$	α_L	ϕ	Pic Run	Test
PTO	71.33			08.0	-180.0	16 29	289-10
1	08.48	.1189	-0.025				
2	08.08	.1133	-0.040				
4	08.48	.1189	-0.025				
5	08.58	.1203	-0.021				
6	09.18	.1227	0.002				
7	40.28	.6900					
8	49.08	.6891					
9	48.98	.6857					
10	49.09	.6881					
11	49.09	.6881					
12	48.98	.6867					
13	48.78	.6839					
14	48.68	.6825					
15	47.98	.6712					
PTO	71.33			08.0	-165.0	17 29	289-10
1	08.48	.1188	-0.025				
2	08.08	.1132	-0.041				
4	08.58	.1202	-0.021				
5	08.28	.1160	-0.022				
6	09.08	.1272	-0.002				
7	49.68	.6960					
8	49.68	.6960					
9	49.63	.6960					
10	49.88	.6988					
11	49.78	.6974					
12	49.78	.6974					
13	49.68	.6960					
14	49.48	.6932					
15	49.78	.6934					
PTO	71.33			08.0	-150.0	18 29	289-10
1	08.28	.1161	-0.023				
2	07.88	.1105	-0.048				
4	08.28	.1161	-0.033				
5	07.68	.1077	-0.056				
6	08.58	.1203	-0.021				
7	50.28	.7049					
8	50.28	.7063					
9	50.38	.7063					
10	50.58	.7091					
11	50.58	.7091					
12	50.48	.7077					
13	50.28	.7049					
14	49.88	.6993					
15	49.28	.6909					

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	P _x	P _x /P _{t,0}	ΔP/q	α _z	φ	Pic Run	Test
PTO	71.38			06.0	-070.0	19 29	289-10
1	08.08	.1132	-0.041				
2	07.68	.1076	-0.056				
4	07.58	.1062	-0.060				
5	07.18	.1006	-0.076				
6	08.38	.1174	-0.028				
7	50.98	.7142					
8	51.08	.7156					
9	51.18	.7170					
10	51.28	.7184					
11	51.08	.7156					
12	51.08	.7156					
13	51.28	.7184					
14	51.18	.7170					
15	41.78	.5853					
PTO	71.23			02.0	-065.0	20 29	289-10
1	08.18	.1148	-0.036				
2	07.88	.1106	-0.048				
4	07.68	.1078	-0.056				
5	07.28	.1022	-0.072				
6	08.58	.1205	-0.020				
7	50.78	.7120					
8	50.98	.7157					
9	50.98	.7157					
10	51.08	.7171					
11	50.88	.7143					
12	50.98	.7157					
13	51.08	.7171					
14	50.78	.7120					
15	38.98	.5472					
PTO	71.13			08.0	-060.0	21 29	289-10
1	08.18	.1150	-0.036				
2	07.98	.1122	-0.044				
4	07.68	.1080	-0.055				
5	07.38	.1032	-0.067				
6	08.78	.1234	-0.012				
7	50.68	.7125					
8	50.38	.7152					
9	50.98	.7157					
10	50.98	.7167					
11	50.78	.7139					
12	50.88	.7152					
13	50.88	.7153					
14	50.68	.7125					
15	38.08	.5354					

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	p_x	$p_x/p_{t,o}$	$\Delta p/q$	α_c	ϕ	Pic Run	Test
PTO	70.28			08.0	-055.0	22 29	289-10
1	08.28	.1168	-0.031				
2	07.58	.1126	-0.042				
4	07.68	.1084	-0.054				
5	07.38	.1041	-0.065				
6	08.72	.1232	-0.011				
7	50.58	.7126					
8	50.68	.7150					
9	50.68	.7150					
10	50.72	.7164					
11	50.58	.7130					
12	50.68	.7150					
13	50.68	.7150					
14	50.28	.7084					
15	40.68	.5738					
PTO	71.18			08.0	-050.0	23 29	289-10
1	08.38	.1177	-0.028				
2	08.08	.1135	-0.040				
4	07.88	.1107	-0.048				
5	07.38	.1037	-0.067				
6	08.68	.1218	-0.016				
7	50.78	.7124					
8	50.88	.7148					
9	50.88	.7148					
10	50.88	.7162					
11	50.68	.7120					
12	50.38	.7072					
13	50.78	.7134					
14	50.28	.7064					
15	45.88	.6446					
PTO	70.93			08.0	-040.0	24 29	289-10
1	08.38	.1181	-0.027				
2	08.18	.1152	-0.035				
4	07.98	.1125	-0.043				
5	07.18	.1012	-0.074				
6	08.48	.1106	-0.022				
7	50.18	.7075					
8	50.38	.7102					
9	50.58	.7131					
10	50.58	.7131					
11	50.58	.7131					
12	50.38	.7102					
13	50.18	.7075					
14	49.78	.7018					
15	49.18	.6934					

APPENDIX E (CONT'D)

TABLE IV GAL TEST 289-10 M = 2.00

TAP	P _x	P _x /P _{t,0}	Δp/q	α ₂	φ	Pic Run	Test
PTO	71.33			08.0	-035.0	25 29	289-10
1	08.48	.1160	-0.025				
2	08.28	.1161	-0.033				
4	08.08	.1123	-0.040				
5	07.28	.1021	-0.072				
6	08.58	.1203	-0.021				
7	50.18	.7035					
8	50.58	.7001					
9	50.78	.7119					
10	50.88	.7132					
11	50.68	.7105					
12	50.48	.7077					
13	50.28	.7049					
14	49.08	.7007					
15	49.48	.6937					
PTO	71.08			12.0	-035.0	26 29	289-10
1	07.78	.1005	-0.051				
2	07.48	.1052	-0.063				
4	06.18	.0866	-0.114				
5	04.88	.0627	-0.165				
6	04.48	.0630	-0.181				
7	40.28	.6922					
8	40.98	.7032					
9	40.98	.7022					
10	40.88	.7017					
11	40.88	.6977					
12	40.18	.6919					
13	40.08	.6764					
14	45.78	.6441					
15	26.38	.3711					
PTO	71.08			12.0	-040.0	27 29	289-10
1	07.68	.1000	-0.055				
2	07.28	.1024	-0.071				
4	05.88	.0827	-0.126				
5	04.78	.0672	-0.150				
6	05.28	.0743	-0.140				
7	40.78	.7003					
8	50.28	.7074					
9	50.18	.7060					
10	40.88	.7017					
11	40.88	.6877					
12	40.08	.6905					
13	47.68	.5708					
14	45.28	.6370					
15	26.88	.3782					

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	P _x	P _x /P _{t,o}	$\Delta p/q$	α_s	ϕ	Pic Run Test
PTO	71.08			12.0	-050.0	28 29 289-10
1	07.48	.1052	-0.063			
2	07.08	.0996	-0.079			
4	06.08	.0855	-0.118			
5	05.48	.0771	-0.142			
6	06.98	.0968	-0.087			
7	50.28	.7074				
8	50.58	.7116				
9	50.48	.7102				
10	50.18	.7060				
11	49.28	.6933				
12	49.28	.6947				
13	47.78	.6723				
14	44.08	.6201				
15	19.88	.2797				
PTO	71.13			12.0	-055.0	29 29 289-10
1	07.48	.1052	-0.063			
2	07.08	.0995	-0.079			
4	06.13	.0869	-0.114			
5	06.13	.0850	-0.114			
6	07.08	.0995	-0.079			
7	50.38	.7033				
8	50.68	.7125				
9	50.48	.7097				
10	50.33	.7023				
11	49.58	.6970				
12	49.08	.6984				
13	48.48	.6916				
14	45.28	.6266				
15	19.78	.2640				
PTO	71.08			12.0	-060.0	30 29 289-10
1	07.38	.1030	-0.067			
2	07.08	.0996	-0.079			
4	06.28	.0884	-0.110			
5	06.58	.0925	-0.099			
6	08.18	.1151	-0.035			
7	50.28	.7074				
8	50.58	.7116				
9	50.58	.7116				
10	50.48	.7102				
11	49.78	.7003				
12	49.08	.7032				
13	49.18	.6919				
14	47.08	.6624				
15	19.18	.2698				

APPENDIX E (CONT'D)

TABLE IV- OAL TEST 289-10 M = 2.00

TAP	P _x	P _x /P _{t,o}	Δp/q	α _d	φ	Pic	Run	Test
PTO	70.98			12.0	-665.0	31	29	289-10
1	07.28	.1026	-0.070					
2	07.18	.1012	-0.074					
4	06.28	.0885	-0.110					
5	06.68	.0941	-0.094					
6	06.78	.1237	-0.011					
7	50.18	.7070						
8	50.58	.7126						
9	50.68	.7140						
10	50.58	.7126						
11	49.98	.7041						
12	50.28	.7084						
13	49.78	.7012						
14	48.68	.6858						
15	28.28	.3984						
PTO	70.98			12.0	-070.0	32	29	289-10
1	07.08	.0998	-0.078					
2	07.18	.1012	-0.074					
4	06.28	.0885	-0.110					
5	07.08	.0998	-0.078					
6	08.48	.1186	-0.023					
7	50.38	.7102						
8	50.68	.7145						
9	50.68	.7145						
10	50.68	.7145						
11	50.28	.7080						
12	50.08	.7060						
13	49.88	.7032						
14	49.68	.7004						
15	47.08	.6638						
PTO	71.02			12.0	-150.0	33	29	289-10
1	08.28	.1166	-0.031					
2	07.78	.1095	-0.051					
4	08.28	.1166	-0.031					
5	07.88	.1100	-0.047					
6	09.08	.1278	0.000					
7	49.88	.7022						
8	49.08	.7036						
9	49.48	.6966						
10	49.78	.7008						
11	49.28	.6938						
12	48.98	.6886						
13	48.08	.6760						
14	46.68	.6572						
15	36.28	.5108						

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	P _x	P _x /P _{t,0}	$\Delta P/q$	α_z	ϕ	Pic	Run	Test
PTO	70.33			12.0	-165.0	34	29	289-10
1	08.58	.1211	-0.019					
2	08.02	.1141	-0.033					
4	08.38	.1254	-0.007					
5	08.88	.1254	-0.007					
6	09.88	.1295	0.022					
7	48.62	.6872						
8	47.98	.6774						
9	47.22	.6675						
10	49.08	.6929						
11	42.98	.6915						
12	48.72	.6297						
13	48.18	.6822						
14	47.28	.6675						
15	46.22	.6534						
PTO	70.93			12.0	-180.0	35	29	289-10
1	08.78	.1238	-0.011					
2	08.18	.1153	-0.035					
4	09.02	.1230	0.001					
5	09.32	.1322	0.012					
6	10.18	.1435	0.044					
7	49.02	.6919						
8	48.32	.6921						
9	47.62	.6722						
10	47.48	.6594						
11	46.52	.6567						
12	45.72	.6454						
13	44.28	.6243						
14	47.82	.6750						
15	46.32	.6536						
PTO	70.38			16.0	-180.0	36	29	289-10
1	09.13	.1295	0.005					
2	08.52	.1210	-0.019					
4	09.82	.1304	0.032					
5	10.62	.1507	0.064					
6	12.02	.1796	0.119					
7	49.32	.6967						
8	48.12	.6797						
9	47.02	.6642						
10	47.12	.6556						
11	45.92	.6497						
12	46.82	.6346						
13	42.92	.6050						
14	40.42	.5711						
15	41.82	.5900						

APPENDIX E (CONT'D)

TABLE IV OAL TEST 239-10 M = 2.00

TAP	P _x	P _x /P _{t,o}	ΔP/q	α _z	φ	Pic Run	Test
PTO	70.83			16.0	-165.0	37 29	289-10
1	08.88	.1254	-0.007				
2	08.38	.1182	-0.027				
4	09.68	.1367	0.025				
5	09.88	.1305	0.033				
6	11.48	.1621	0.006				
7	47.88	.6760					
8	46.78	.6605					
9	45.28	.6393					
10	45.18	.6370					
11	47.00	.6647					
12	46.48	.6562					
13	44.38	.6336					
14	42.80	.6054					
15	41.28	.5828					
PTO	70.83			16.0	-150.0	38 29	289-10
1	08.48	.1197	-0.023				
2	08.03	.1141	-0.038				
4	08.88	.1254	-0.007				
5	08.88	.1254	-0.007				
6	10.12	.1437	0.044				
7	48.78	.6837					
8	49.18	.6943					
9	47.88	.6760					
10	48.08	.6788					
11	46.38	.6548					
12	46.38	.6548					
13	45.88	.6477					
14	44.68	.6302					
15	22.68	.3202					
PTO	70.83			16.0	-070.0	39 29	289-10
1	05.88	.0830	-0.125				
2	05.98	.0844	-0.121				
4	05.28	.0745	-0.149				
5	07.08	.1000	-0.078				
6	06.55	.0922	-0.097				
7	49.48	.6986					
8	49.08	.7056					
9	49.78	.7028					
10	49.58	.7000					
11	48.18	.6802					
12	47.98	.6774					
13	44.68	.6308					
14	28.88	.4077					
15	39.08	.5517					

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	P _x	P _x /P _{t,o}	$\Delta p/q$	α_L	ϕ	Pic	Rm	Test
PTO	70.88			16.0	-065.0	40	29	289-10
1	05.78	.0815	-0.129					
2	06.23	.0286	-0.110					
4	05.68	.0801	-0.133					
5	06.08	.0853	-0.117					
6	06.78	.0957	-0.090					
7	49.48	.6981						
8	49.78	.7022						
9	49.48	.6981						
10	49.28	.6953						
11	47.58	.6713						
12	46.88	.6614						
13	39.68	.5599						
14	18.88	.2664						
15	32.38	.4568						
PTO	71.08			16.0	-060.0	41	29	289-10
1	06.78	.0954	-0.091					
2	06.18	.0869	-0.114					
4	05.98	.0841	-0.122					
5	05.98	.0841	-0.122					
6	07.18	.1010	-0.075					
7	49.38	.6947						
8	49.78	.7003						
9	49.38	.6947						
10	48.88	.6877						
11	46.88	.6595						
12	45.68	.6427						
13	29.68	.4176						
14	12.88	.1912						
15	25.08	.3528						
PTO	71.43			16.0	-055.0	42	29	289-10
1	06.88	.0963	-0.089					
2	06.13	.0865	-0.115					
4	05.38	.0823	-0.127					
5	05.98	.0837	-0.122					
6	07.48	.1047	-0.065					
7	49.38	.6913						
8	49.88	.6932						
9	49.38	.6913						
10	48.68	.6815						
11	46.28	.6479						
12	44.88	.6223						
13	26.12	.3665						
14	10.58	.1481						
15	30.38	.4252						

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	p_x	$p_x/p_{t,0}$	$\Delta p/q$	α_c	ϕ	Pic Run Test
PTO	71.43			16.0	-050.0	43 29 289-10
1	06.88	.0863	-0.088			
2	06.18	.0865	-0.115			
4	05.48	.0767	-0.143			
5	06.28	.0879	-0.111			
6	07.38	.1033	-0.058			
7	49.13	.6885				
8	49.68	.6855				
9	49.08	.6871				
10	48.28	.6759				
11	45.43	.6267				
12	43.68	.5115				
13	27.98	.3917				
14	12.68	.1775				
15	35.58	.4981				
PTO	71.38			16.0	-040.0	44 29 289-10
1	06.88	.0864	-0.088			
2	06.78	.0850	-0.092			
4	03.98	.0558	-0.201			
5	04.08	.0572	-0.197			
6	06.88	.0864	-0.083			
7	48.68	.6820				
8	49.68	.6846				
9	48.68	.6820				
10	47.68	.6690				
11	44.88	.6301				
12	44.88	.6287				
13	42.28	.5923				
14	38.58	.5405				
15	23.88	.3345				
PTO	71.35			16.0	-035.0	45 29 289-10
1	06.98	.0878	-0.084			
2	06.68	.0864	-0.088			
4	02.78	.0389	-0.248			
5	03.58	.0502	-0.217			
6	06.88	.0864	-0.088			
7	48.98	.6843				
8	49.48	.6932				
9	49.68	.6948				
10	47.78	.6694				
11	45.18	.6330				
12	45.88	.6428				
13	44.58	.6245				
14	44.38	.6217				
15	26.78	.3752				

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	P_x	$P_x/P_{t,0}$	$\Delta P/q$	α_i	ϕ	Pic Run	Test
PTO	71.23			20.0	-035.0	46 29	289-10
1	06.28	.0832	-0.111				
2	06.68	.0838	-0.095				
4	02.98	.0418	-0.240				
5	04.28	.0661	-0.189				
6	06.18	.0868	-0.115				
7	45.63	.6553					
8	47.23	.6632					
9	46.02	.6469					
10	45.18	.6343					
11	42.08	.5909					
12	42.88	.6020					
13	42.68	.5932					
14	41.48	.5823					
15	20.88	.2931					
PTO	71.28			20.0	-040.0	47 29	289-10
1	06.18	.0867	-0.115				
2	06.68	.0837	-0.095				
4	04.08	.0572	-0.197				
5	04.88	.0635	-0.166				
6	06.68	.0909	-0.103				
7	46.38	.6507					
8	47.18	.6619					
9	45.78	.6422					
10	44.08	.6134					
11	40.38	.5665					
12	41.88	.5975					
13	41.68	.5947					
14	40.28	.5651					
15	23.28	.3266					
PTO	71.28			20.0	-050.0	48 29	289-10
1	06.48	.0909	-0.103				
2	06.58	.0923	-0.098				
4	05.38	.0755	-0.146				
5	05.38	.0755	-0.146				
6	06.08	.0871	-0.066				
7	46.08	.6465					
8	46.58	.6525					
9	44.38	.6212					
10	41.68	.5832					
11	34.68	.4865					
12	33.28	.4569					
13	31.98	.4473					
14	37.88	.5314					
15	25.18	.3533					

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	p_x	$p_x/p_{t,0}$	$\Delta p/q$	α_c	ϕ	Pic Run	Test
PTO	71.23			20.0	-055.0	49 29	289-10
1	06.38	.0896	-0.107				
2	06.48	.0910	-0.103				
4	05.78	.0811	-0.130				
5	05.48	.0760	-0.142				
6	06.69	.0930	-0.095				
7	46.48	.6525					
8	46.88	.6581					
9	44.68	.6273					
10	41.28	.5795					
11	31.88	.4476					
12	25.88	.3633					
13	23.48	.3296					
14	23.68	.3324					
15	38.98	.5472					
PTO	71.28			20.0	-060.0	50 29	289-10
1	05.28	.0741	-0.150				
2	06.08	.0853	-0.119				
4	05.58	.0783	-0.138				
5	05.48	.0760	-0.142				
6	06.28	.0821	-0.111				
7	47.18	.6610					
8	47.48	.6661					
9	45.78	.6423					
10	42.98	.6030					
11	30.08	.4220					
12	20.68	.2901					
13	12.08	.1605					
14	15.28	.2144					
15	38.58	.5412					
PTO	71.23			20.0	-065.0	51 29	289-10
1	05.48	.0760	-0.142				
2	05.88	.0825	-0.127				
4	05.18	.0727	-0.154				
6	06.08	.0854	-0.118				
7	47.83	.6722					
8	48.08	.6750					
9	46.76	.6567					
10	44.78	.6287					
11	37.98	.5332					
12	21.48	.3016					
13	08.98	.1261					
14	14.48	.2033					
15	38.68	.5430					
PTO	71.38			20.0	-070.0	52 29	289-10

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 $M = 2.00$

TAP	P_x	$P_x/P_{t,0}$	$\Delta p/q$	α_x	ϕ	Pic	Run	Test
1	05.48	.0768	-0.142					
2	05.48	.0768	-0.142					
4	05.18	.0726	-0.154					
6	05.38	.0824	-0.127					
7	48.68	.6820						
8	48.88	.6848						
9	47.28	.6708						
10	46.68	.6540						
11	40.38	.5657						
12	24.78	.3472						
13	11.98	.1678						
14	16.08	.2252						
15	38.58	.5405						
PTO	71.53				20.0	-150.0	53	29 289-10
1	09.08	.1268	-0.002					
2	08.68	.1213	-0.013					
4	03.88	.1381	0.029					
6	11.68	.1633	0.099					
7	44.98	.6220						
8	43.38	.6055						
9	43.88	.6134						
10	44.18	.6176						
11	41.88	.5855						
12	41.48	.5790						
13	39.88	.5575						
14	37.28	.5212						
15	22.68	.3171						
PTO	71.43				20.0	-165.0	54	29 289-10
1	09.18	.1235	0.002					
2	09.08	.1271	-0.002					
4	10.88	.1522	0.068					
6	12.88	.1803	0.147					
7	47.68	.6675						
8	46.18	.6463						
9	44.08	.6171						
10	44.28	.6199						
11	42.18	.5905						
12	40.48	.5667						
13	41.28	.5770						
14	39.68	.5554						
15	37.78	.5289						
PTO	71.48				20.0	-180.0	55	29 289-10
1	09.88	.1382	0.029					
2	09.28	.1292	0.006					

APPENDIX E (CONT'D)

TABLE IV ONE TEST 289-10 M = 2.00

TAP	P_x	$P_x/P_{t,0}$	$\Delta P/q$	α_z	ϕ	Pic Run Test
4	11.28	.1578	0.024			
6	12.38	.1872	0.156			
7	50.48	.7062				
8	49.08	.6866				
9	47.68	.6670				
10	48.08	.6726				
11	46.58	.6517				
12	45.38	.6349				
13	42.88	.5990				
14	39.68	.5551				
15	33.48	.4694				
PTC	71.48			23.0	-180.0	56 29 289-10
1	10.48	.1466	0.053			
2	09.28	.1382	0.029			
4	12.48	.1746	0.131			
6	14.98	.2086	0.229			
7	51.08	.7146				
8	49.68	.6950				
9	47.98	.6712				
10	48.68	.6810				
11	47.38	.6628				
12	45.78	.6405				
13	43.48	.6033				
14	39.88	.5579				
15	32.78	.4596				
PTD	71.53			23.0	-165.0	57 29 289-10
1	09.83	.1381	0.029			
2	09.78	.1367	0.025			
4	11.93	.1675	0.111			
6	14.48	.2024	0.200			
7	47.68	.6666				
8	45.08	.6442				
9	43.68	.6107				
10	44.28	.6190				
11	42.28	.5911				
12	40.48	.5659				
13	37.28	.5212				
14	34.48	.4820				
15	35.23	.4932				
PTD	71.43			23.0	-150.0	58 29 289-10
1	09.68	.1355	0.022			
2	09.18	.1235	0.002			
4	10.83	.1523	0.069			

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 M = 2.00

TAP	P _x	P _x /P _{t,0}	ΔP/q	α _z	φ	Pic Run Test
6	12.48	.1217	0.151			
7	42.48	.6087				
8	41.48	.5807				
9	40.28	.5620				
10	42.28	.5891				
11	37.58	.5541				
12	38.78	.5420				
13	37.28	.5219				
14	34.68	.4258				
15	22.48	.3147				
PTO	71.48				23.0 -070.0	58 29 289-10
1	05.68	.0705	-0.135			
2	06.18	.0865	-0.115			
4	05.68	.0705	-0.135			
6	05.38	.0753	-0.147			
7	47.18	.6500				
8	47.28	.6523				
9	45.48	.6363				
10	41.33	.6780				
11	22.43	.3145				
12	15.38	.2222				
13	11.08	.1676				
14	10.98	.1942				
15	32.83	.4740				
PTO	71.38				23.0 -065.0	60 29 289-10
1	05.38	.0754	-0.146			
2	06.08	.0852	-0.110			
4	05.78	.0810	-0.131			
6	05.28	.0740	-0.150			
7	45.68	.6400				
8	45.88	.6428				
9	43.28	.6062				
10	31.43	.4430				
11	14.78	.2071				
12	18.08	.2532				
13	10.30	.1477				
14	12.48	.1				
15	34.48	.48.1				
PTO	71.63				23.0 -060.0	61 29 289-10
1	05.15	.0722	-0.155			
2	06.68	.0932	-0.096			
4	05.88	.0821	-0.128			
6	05.28	.0737	-0.151			
7	44.28	.6132				

APPENDIX E (CONT'D)

TABLE IV OAL TEST 239-10² W = 2.00

TAP	P _x	P _x /P _{t,o}	$\Delta p/q$	α_x	ϕ	Pic Run Test
8	46.08	.6154				
9	38.53	.5386				
10	30.28	.4227				
11	18.53	.2594				
12	17.73	.2432				
13	16.48	.2301				
14	13.68	.1910				
15	35.52	.4967				
PTO	71.43				23.0	-055.0 62 29 289-10
1	05.13	.0718	-0.156			
2	06.53	.0914	-0.102			
4	05.93	.0830	-0.125			
6	05.43	.0760	-0.145			
7	42.23	.5996				
8	42.53	.5963				
9	38.13	.5338				
10	32.43	.4630				
11	22.43	.3280				
12	22.23	.3252				
13	26.33	.3686				
14	25.13	.3519				
15	36.53	.5114				
PTO	71.53				23.0	-050.0 53 29 289-10
1	05.58	.0730	-0.139			
2	06.98	.0976	-0.084			
4	05.78	.0808	-0.121			
6	05.48	.0766	-0.143			
7	42.58	.5953				
8	43.18	.6037				
9	32.78	.5422				
10	30.68	.5126				
11	22.58	.3924				
12	20.18	.4219				
13	20.19	.3660				
14	35.38	.5016				
15	27.62	.3870				
PTO	71.58				23.0	-040.0 64 29 289-10
1	05.98	.0835	-0.124			
2	07.12	.1002	-0.077			
4	04.08	.0570	-0.103			
6	05.48	.0766	-0.143			
7	42.98	.6006				
8	43.28	.6046				
9	40.88	.5711				

APPENDIX E (CONT'D)

TABLE IV OAL TEST 289-10 $M = 2.00$

TAP	P_x	$P_x/P_{t,0}$	$\Delta p/q$	α_z	ϕ	Pic Run	Test
10	39.78	.5557					
11	35.88	.5013					
12	38.18	.5234					
13	38.28	.5249					
14	36.78	.5132					
15	23.63	.3308					
PTO	71.53				23.0 - 35.0	65 29	289-10
1	05.78	.0808	-0.131				
2	06.88	.0962	-0.088				
4	03.28	.0450	-0.229				
6	05.48	.0766	-0.143				
7	40.68	.5627					
8	42.88	.5995					
9	40.88	.5715					
10	40.08	.5603					
11	37.28	.5212					
12	30.18	.5477					
13	38.78	.5422					
14	36.78	.5142					
15	20.68	.2801					
PTO	71.53				00.0 - 00.0	66 29	289-10
1	09.08	.1260	-0.022				
2	08.58	.1190	-0.022				
4	08.68	.1241	-0.010				
6	09.08	.1260	-0.002				
7	49.88	.6972					
8	49.28	.6889					
9	49.68	.6945					
10	49.89	.6927					
11	50.18	.7015					
12	50.18	.7015					
13	50.18	.7015					
14	50.22	.7043					
15	50.28	.7043					

OAL 289-19

APPENDIX B

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 239-19 $M_o = 2.00$

$$P_t'/P_{t,o}$$

α/γ	0.169	0.369	0.569	0.769	0.969	β_R	β	Rake	Run
00	.7082	.7038	.7067	.7169	.7096	030	000	1	1
04	.6990	.6976	.7063	.7165	.7107				
08	.6781	.6825	.6971	.7103	.7059				
12	.6558	.6689	.6879	.6996	.6631				
16	.6022	.6285	.6052	.6402	.6504				
20	.4518	.5352	.5938	.6318	.6479				
23	.4251	.5304	.5977	.6372	.6548				
00	.7110	.7081	.7168	.7212	.7154	015	000	1	1
04	.6976	.6976	.7092	.7180	.7121				
08	.6810	.6825	.6955	.7086	.7057				
12	.6510	.6582	.6728	.6902	.6902				
16	.5735	.6025	.6330	.6665	.6796				
20	.5273	.5579	.5855	.6059	.5826				
23	.4870	.5276	.5654	.5451	.5668				
✓00	.7101	.7072	.7072	.7101	.7188	000	000	1	1
04	.7014	.7000	.7087	.7087	.7233				
08	.6844	.6873	.6989	.7119	.7105				
12	.4582	.6432	.6679	.6912	.6927				
16	.3572	.6268	.6297	.6457	.6558				
✓20	.3146	.5847	.5963	.6079	.6108				
23	.3291	.5353	.5469	.5556	.5484				
00	.7106	.7106	.7062	.7033	.7106	-015	000	1	1
04	.7043	.7057	.7043	.7057	.7086				
08	.5730	.6936	.6979	.7052	.7052				
12	.2664	.5842	.6510	.6800	.7003				
16	.5332	.2132	.3965	.5768	.6422				
20	.3872	.5440	.4235	.4670	.5295				
23	.4750	.4750	.3441	.4095	.4459				
00	.7106	.7106	.7106	.7091	.7062	-030	000	1	1
04	.7058	.7102	.7102	.7087	.7058				
08	.4380	.7008	.7052	.7052	.7037				
12	.3208	.6553	.6830	.6931	.6960				
16	.4601	.2116	.4165	.6272	.6665				
20	.5288	.1958	.1230	.2525	.4459				
23	.4357	.1696	.1478	.2525	.2525				
00	.7091	.7091	.7091	.7077	.7077	-040	000	1	1
04	.7038	.7096	.7096	.7096	.7082				
08	.6078	.7082	.7111	.7111	.7096				
12	.6820	.6936	.7024	.7038	.7067				
16	.5695	.5303	.6306	.6699	.6830				
20	.5004	.2718	.2412	.3359	.5893				
23	.4501	.2313	.2138	.2445	.2911				
00	.7092	.7092	.7107	.7078	.7078	-045	000	1	1
04	.7063	.7107	.7107	.7107	.7107				
08	.6947	.7107	.7136	.7136	.7121				
12	.6961	.7019	.7063	.7107	.7078				
16	.6014	.6145	.6611	.6859	.6947				
20	.5019	.3533	.4218	.5252	.6490				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_o = 2.00$

$P_t/P_{t,o}$									
α_1/y	0.169	0.369	0.569	0.769	0.969	β_R	ϕ	$P_{t,o}$	M_{ur}
23	.4640	.2732	.3140	.3140	.3461				
00	.7095	.7095	.7080	.7051	.7037	-050	000	1	2
04	.7074	.7103	.7103	.7103	.7089				
08	.7080	.7138	.7124	.7138	.7124				
12	.6989	.7061	.7105	.7105	.7105				
16	.6120	.6324	.6717	.6906	.6994				
20	.5057	.3870	.5014	.6085	.6678				
23	.4707	.2775	.3438	.4433	.5645				
00	.7098	.7112	.7112	.7069	.7055	-055	000	1	2
04	.7084	.7112	.7127	.7112	.7098				
08	.7134	.7163	.7163	.7142	.7105				
12	.7047	.7120	.7178	.7178	.7221				
16	.6203	.6436	.6829	.7032	.7105				
20	.5097	.4065	.5272	.6319	.6916				
23	.4741	.2780	.3550	.4741	.6078				
00	.7115	.7130	.7130	.7101	.7086	-060	000	1	2
04	.7003	.7105	.7120	.7105	.7090				
08	.7130	.7174	.7159	.7159	.7130				
12	.7032	.7105	.7134	.7134	.7134				
16	.6173	.6377	.6756	.6946	.7033				
20	.5083	.3960	.5069	.6119	.6746				
23	.4718	.2807	.3478	.4383	.5535				
00	.7105	.7120	.7120	.7090	.7061	-065	000	1	2
04	.7116	.7131	.7131	.7131	.7116				
08	.7116	.7160	.7160	.7160	.7160				
12	.6975	.7048	.7077	.7106	.7091				
16	.6080	.6226	.6649	.6897	.6970				
20	.5032	.3615	.4170	.5076	.6523				
23	.4657	.2820	.3140	.2849	.3126				
00	.7110	.7110	.7110	.7096	.7067	-070	000	1	2
04	.7102	.7131	.7131	.7131	.7102				
08	.6989	.7121	.7135	.7135	.7135				
12	.6951	.7010	.7068	.7083	.7098				
16	.5890	.5861	.6445	.6766	.6897				
20	.5120	.3060	.2563	.3396	.6040				
23	.4565	.2563	.2271	.2534	.2855				
00	.7109	.7124	.7124	.7095	.7080	-075	000	1	2
04	.7061	.7119	.7134	.7119	.7104				
08	.6421	.7120	.7120	.7134	.7120				
12	.6780	.6925	.7012	.7041	.7070				
16	.5640	.4038	.6077	.6630	.6819				
20	.5047	.2337	.1740	.2701	.5455				
23	.4478	.2147	.1914	.2395	.2759				
00	.7101	.7115	.7130	.7086	.7072	-080	000	1	2
04	.7048	.7135	.7121	.7106	.7091				
08	.5112	.7061	.7090	.7120	.7090				
12	.5156	.6790	.6965	.7024	.7053				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$

$$P_t'/P_{t,0}$$

α_1/γ	0.169	0.369	0.569	0.769	0.969	β_R	β	$P_{t,1b}$	$P_{t,2b}$
16	.5163	.2490	.4945	.6426	.6702				
20	.5312	.2070	.1285	.2463	.5399				
23	.4465	.1851	.1502	.2592	.2316				
00	.7143	.7143	.7143	.7114	.7071	-.085	000	1	2
04	.7056	.7143	.7129	.7114	.7114				
08	.4259	.7031	.7090	.7104	.7104				
12	.2894	.6494	.6828	.6959	.6988				
16	.4393	.1880	.3739	.6180	.6586				
20	.5406	.2053	.1515	.2662	.3794				
23	.4535	.1719	.1936	.2227	.2532				
00	.7114	.7129	.7129	.7100	.7071	-.090	000	1	2
04	.7051	.7124	.7109	.7109	.7109				
08	.4062	.6998	.7056	.7085	.7085				
12	.2515	.6200	.6722	.6896	.6954				
16	.4056	.1501	.3098	.5957	.6436				
20	.5414	.2506	.2593	.3102	.4062				
23	.4680	.1994	.3069	.2619	.3112				
00	.7119	.7119	.7104	.7090	.7075	-.095	000	1	2
04	.7056	.7114	.7114	.7114	.7114				
08	.4309	.6969	.7042	.7071	.7085				
12	.2523	.5898	.6581	.6814	.6901				
16	.5185	.1533	.3221	.5621	.6276				
20	.5418	.4588	.4065	.3948	.4559				
23	.4872	.3313	.3284	.3429	.3677				
00	.7150	.7150	.7150	.7120	.7105	-100	000	1	3
04	.7140	.7155	.7140	.7125	.7096				
08	.7091	.7120	.7120	.7120	.7120				
12	.5722	.7018	.7062	.7106	.7092				
16	.2771	.5974	.6591	.6826	.6885				
20	.5230	.2226	.3947	.5726	.6222				
23	.5282	.1981	.3938	.5735	.6231				
00	.4254	.5542	.4254	.4693	.5015				
04	.5001	.5015	.3424	.4096	.4183				
08	.7137	.7137	.7137	.7108	.7108	-105	000	1	3
12	.7079	.7108	.7108	.7122	.7108				
16	.6450	.6962	.7022	.7049	.7049				
20	.3130	.5901	.6435	.6747	.6806				
23	.4201	.5121	.5034	.5910	.6202				
00	.2876	.4953	.5129	.5304	.5451				
04	.3679	.4340	.4560	.4736	.4707				
08	.7147	.7147	.7118	.7104	.7060	-110	000	1	3
12	.7086	.7115	.7115	.7115	.7115				
16	.6884	.6957	.7001	.7030	.7016				
20	.3850	.6108	.6518	.6723	.6797				
23	.2807	.5606	.5795	.6116	.6261				
00	.3532	.4891	.5564	.5622	.5637				
04	.3909	.4378	.4964	.5081	.5052				
08	.7153	.7153	.7123	.7109	.7065	-115	000	1	3

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_o = 2.00$

$P_t'/P_{t,o}$									
α_1	γ	0.169	0.369	0.569	0.769	0.969	ϕ_R	ϕ	Rate Run
04		.7091	.7105	.7120	.7120	.7105			
08		.6907	.6966	.7009	.7038	.7009			
12		.4440	.6347	.6582	.6758	.6787			
16		.3794	.5980	.6083	.6259	.6317			
20		.3378	.5678	.5722	.5810	.5795			
23		.3780	.5213	.5125	.5257	.5183			
00		.7153	.7153	.7138	.7123	.7065	-120	000	1 3
04		.7089	.7104	.7118	.7104	.7089			
08		.6913	.6972	.7001	.7030	.7001			
12		.3921	.6490	.6636	.6767	.6811			
16		.3504	.6397	.6225	.6326	.6354			
20		.3096	.5578	.5722	.5881	.5823			
23		.3038	.5077	.5048	.5165	.5165			
00		.7164	.7150	.7135	.7106	.7048	-125	000	1 3
04		.7087	.7087	.7087	.7037	.7058			
08		.6902	.6946	.6990	.7019	.6990			
12		.5506	.6553	.6640	.6757	.6830			
16		.3271	.6271	.6271	.6315	.6432			
20		.3562	.5194	.5252	.5514	.5645			
23		.3045	.4840	.4942	.5293	.5351			
00		.7145	.7145	.7131	.7087	.7043	-130	000	1 3
04		.7072	.7086	.7086	.7072	.7043			
08		.6898	.6941	.6971	.6985	.7029			
12		.6548	.6592	.6650	.6767	.6825			
16		.4294	.5955	.6116	.6364	.6538			
20		.5154	.5256	.5372	.5664	.5766			
23		.4585	.4964	.5110	.5431	.5460			
00		.7151	.7136	.7092	.7092	.7063	-135	000	1 3
04		.7063	.7092	.7078	.7063	.7063			
08		.6864	.6923	.6952	.6967	.7011			
12		.6552	.6596	.6655	.6728	.6801			
16		.5793	.5925	.6115	.6377	.6553			
20		.5768	.5417	.5505	.5754	.5476			
23		.5063	.5063	.5223	.5150	.5253			
00		.7142	.7142	.7113	.7084	.7084	-150	000	1 3
04		.7041	.7073	.7070	.7041	.7070			
08		.6816	.6899	.6933	.6948	.6977			
12		.6611	.6670	.6728	.6816	.6479			
16		.6074	.6191	.6308	.6045	.6220			
20		.5429	.4931	.5400	.5839	.6074			
23		.5048	.4785	.5297	.5825	.6030			

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $u_o = 2.00$

$P_t'/P_{t,o}$

a_1/y	1.169	1.369	1.569	1.769	1.969	ϕ_R	ϕ	R_{ake}	R_{un}
00	.7038	.7038	.7038	.7038	.7009	030	000	1	1
04	.7049	.7034	.7034	.7019	.7019				
08	.6986	.6957	.6942	.6942	.6957				
12	.6667	.6733	.6806	.6850	.6894				
16	.6577	.6679	.6767	.6825	.6884				
20	.6596	.6714	.6801	.6889	.6948				
23	.6694	.6796	.6870	.6972	.7016				
00	.7096	.7096	.7096	.7096	.7067	015	000	1	1
04	.7078	.7092	.7078	.7063	.7049				
08	.7014	.7028	.7014	.6999	.6970				
12	.6888	.6931	.6917	.6757	.6771				
16	.6272	.6360	.6461	.6548	.6607				
20	.5257	.6131	.6248	.6379	.6437				
23	.5900	.6046	.6162	.6307	.6365				
✓ 00	.7115	.7072	.7043	.7014	.7014	000	000	1	1
04	.7116	.7073	.7073	.7043	.7029				
08	.7076	.7032	.7047	.7018	.7018				
12	.6927	.6912	.6927	.6956	.6956				
16	.6616	.6733	.6791	.6805	.6820				
✓ 20	.6195	.6355	.6224	.6311	.6021				
23	.5542	.5658	.5760	.5556	.5658				
00	.7120	.7135	.7077	.7033	.6990	-015	000	1	1
04	.7188	.7144	.7086	.7043	.7014				
08	.7154	.7125	.7081	.7037	.7008				
12	.7018	.7018	.7003	.6960	.6974				
16	.6640	.6728	.6757	.6844	.6902				
20	.5745	.6021	.6195	.6428	.6558				
23	.4793	.5201	.5506	.5826	.6146				
00	.7019	.6975	.7019	.7019	.7004	-030	000	1	1
04	.7043	.7029	.7073	.7058	.7087				
08	.7052	.7067	.7067	.7081	.7168				
12	.7019	.7048	.7125	.7150	.7135				
16	.6310	.7014	.7028	.7043	.7101				
20	.6233	.6524	.6684	.6800	.6844				
23	.3485	.6201	.6379	.6510	.6582				
00	.7048	.7033	.7084	.6975	.6960	-040	000	1	1
04	.7022	.7067	.7053	.7024	.7024				
08	.7096	.7067	.7053	.7053	.7053				
12	.7067	.7067	.7053	.7053	.7111				
16	.6917	.7034	.7062	.7091	.7106				
20	.6636	.6825	.6971	.7014	.7043				
23	.5420	.6543	.6747	.6820	.6849				
00	.7040	.7034	.7034	.7019	.7005	-045	000	1	1
04	.7107	.7092	.7078	.7078	.7078				
08	.7107	.7107	.7092	.7092	.7092				
12	.7107	.7107	.7092	.7107	.7136				
16	.6990	.7034	.7092	.7092	.7092				
20	.6810	.6941	.7000	.7014	.7029				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 9-19 $M_0 = 2.00$

$P_t/P_{t,0}$

α_1	1.169	1.369	1.569	1.769	1.969	β_R	ϕ	Re	Run
23	.5936	.6752	.6883	.6971	.6985				
00	.7022	.7022	.7008	.6993	.6979	-050	000	1	2
04	.7074	.7074	.7060	.7060	.7060				
08	.7124	.7139	.7109	.7109	.7109				
12	.7134	.7120	.7120	.7134	.7163				
16	.7037	.7081	.7125	.7139	.7139				
20	.6910	.7011	.7026	.7040	.7055				
23	.6568	.6856	.6943	.6957	.6986				
00	.7040	.7026	.7026	.7011	.6997	-055	000	1	2
04	.7098	.7098	.7084	.7084	.7084				
08	.7120	.7120	.7120	.7120	.7134				
12	.7149	.7134	.7134	.7149	.7192				
16	.7134	.7149	.7163	.7178	.7178				
20	.7120	.7120	.7192	.7192	.7178				
23	.6804	.6949	.7080	.7080	.7037				
00	.7072	.7057	.7057	.7043	.7043	-060	000	1	2
04	.7105	.7105	.7076	.7076	.7076				
08	.7145	.7130	.7130	.7130	.7145				
12	.7134	.7134	.7134	.7134	.7178				
16	.7077	.7106	.7164	.7179	.7179				
20	.6965	.7038	.7082	.7097	.7097				
23	.6586	.6849	.6922	.6951	.6965				
00	.7047	.7047	.7032	.7018	.7032	-065	000	1	2
04	.7131	.7131	.7116	.7087	.7087				
08	.7146	.7146	.7131	.7116	.7131				
12	.7106	.7106	.7121	.7135	.7150				
16	.7043	.7073	.7121	.7160	.7175				
20	.6844	.6932	.7005	.7019	.7049				
23	.5925	.6654	.6829	.6858	.6887				
00	.7037	.7037	.7037	.7023	.7008	-070	000	1	2
04	.7131	.7116	.7116	.7087	.7087				
08	.7135	.7121	.7106	.7106	.7121				
12	.7127	.7127	.7127	.7127	.7171				
16	.6985	.7029	.7116	.7116	.7116				
20	.6683	.6800	.6917	.6961	.6975				
23	.5470	.6391	.6683	.6742	.6800				
00	.7080	.7066	.7051	.7022	.7022	-075	000	1	2
04	.7104	.7090	.7090	.7075	.7075				
08	.7134	.7120	.7134	.7134	.7149				
12	.7099	.7084	.7099	.7142	.7157				
16	.6936	.7008	.7067	.7067	.7096				
20	.6460	.6635	.6780	.6824	.6897				
23	.5440	.6168	.6518	.6635	.6722				
00	.7043	.7043	.7043	.7028	.7013	-080	000	1	2
04	.7106	.7106	.7091	.7077	.7077				
08	.7120	.7120	.7105	.7090	.7134				
12	.7082	.7082	.7140	.7140	.7111				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_o = 2.00$

$\alpha_1 \backslash \gamma$	1.169	1.369	1.569	1.769	1.969	ϕ_R	ϕ	ϕ_{Rk}	ϕ_{Rk}
16	.6877	.6964	.7022	.7022	.7037				
20	.6242	.6446	.6649	.6766	.6853				
23	.3536	.5947	.6310	.6441	.6586				
00	.7056	.7071	.7056	.7027	.7013	-085	000	1	2
04	.7100	.7100	.7085	.7085	.7056				
08	.7104	.7090	.7090	.7075	.7104				
12	.7046	.7046	.7046	.7075	.7090				
16	.6761	.6848	.6935	.6993	.7022				
20	.5841	.6204	.6523	.6640	.6756				
23	.3635	.4811	.5885	.6204	.6407				
00	.7071	.7071	.7056	.7027	.6984	-090	000	1	2
04	.7109	.7080	.7080	.7051	.7022				
08	.7085	.7085	.7056	.7042	.7056				
12	.6997	.6997	.7012	.7055	.7099				
16	.6669	.6727	.6930	.6959	.7017				
20	.5283	.5981	.6417	.6562	.6707				
23	.3853	.4665	.5594	.5914	.6291				
00	.7061	.7046	.7017	.6973	.6944	-095	000	1	2
04	.7100	.7056	.7027	.6998	.7027				
08	.7071	.7042	.7027	.7056	.7056				
12	.6945	.6930	.7003	.7018	.7032				
16	.6552	.6669	.6814	.6916	.7003				
20	.5418	.5854	.6319	.6509	.6712				
23	.4304	.4945	.5513	.5964	.6256				
00	.7091	.7061	.7032	.7061	.7047	-100	000	1	3
04	.7096	.7067	.7037	.7052	.7037				
08	.7105	.7076	.7061	.7076	.7076				
12	.7092	.7077	.7106	.7121	.7136				
16	.6944	.7017	.7091	.7091	.7091				
20	.6602	.6704	.6879	.6937	.7010				
23	.6597	.6699	.6880	.6933	.7020				
00	.6680	.6669	.6391	.5552	.6714				
23	.4767	.5001	.5789	.5093	.6285				
00	.7064	.7049	.7049	.7020	.6991	-105	000	1	3
04	.7079	.7035	.7049	.7049	.7035				
08	.7020	.7035	.7049	.7035	.7035				
12	.6879	.6922	.6952	.6966	.7025				
16	.6524	.6611	.6736	.6874	.6918				
20	.5875	.6006	.6358	.6504	.6665				
23	.5148	.5265	.5588	.5764	.6028				
00	.7030	.7016	.7045	.7001	.6987	-110	000	1	3
04	.7056	.7086	.7086	.7056	.7042				
08	.7001	.7045	.7045	.7030	.7074				
12	.6999	.6914	.6958	.7002	.7002				
16	.6538	.6626	.6801	.6959	.6874				
20	.6104	.6207	.6455	.6499	.6629				
23	.5404	.5463	.5741	.5756	.5932				
00	.7036	.7065	.7065	.7036	.7065	-115	000	1	3

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 259-19 $M_0 = 2.00$

$P_t/P_{t,0}$

α_1	1.169	1.369	1.569	1.769	1.969	θ_R	θ	Rake	Run
04	.7061	.7091	.7091	.7061	.7091				
08	.7024	.7053	.7038	.7082	.7053				
12	.6904	.6919	.6963	.6992	.6992				
16	.6552	.6655	.6846	.6816	.6875				
20	.6103	.6250	.6543	.6267	.6045				
23	.5476	.5505	.5783	.5768	.5710				
00	.7050	.7079	.7079	.7094	.7065	-120	000	1	3
04	.7089	.7104	.7089	.7147	.7089				
08	.7060	.7060	.7060	.7089	.7045				
12	.6913	.6927	.7030	.6986	.6971				
16	.6598	.6684	.6856	.6827	.6856				
20	.5895	.5996	.6270	.5953	.6155				
23	.5572	.5674	.5543	.5660	.5878				
00	.7077	.7077	.7077	.7106	.7048	-125	000	1	3
04	.7102	.7116	.7087	.7116	.7073				
08	.7048	.7048	.7106	.7077	.7033				
12	.6902	.6931	.7004	.6960	.6931				
16	.6679	.6738	.6898	.6388	.6534				
20	.5980	.5966	.5980	.6082	.6271				
23	.5701	.5497	.5760	.5877	.6081				
00	.7087	.7087	.7145	.7087	.7058	-130	000	1	3
04	.7086	.7086	.7144	.7101	.7057				
08	.7043	.7058	.7087	.7029	.7014				
12	.6912	.6912	.6985	.6927	.6796				
16	.6772	.6393	.6422	.6451	.6597				
20	.5795	.5897	.6116	.6203	.6393				
23	.5489	.5722	.5985	.6101	.6276				
00	.7078	.7092	.7136	.7092	.7063	-135	000	1	3
04	.7092	.7092	.7136	.7092	.7063				
08	.7040	.7040	.7055	.7011	.6996				
12	.6889	.6889	.6918	.6743	.6772				
16	.6173	.6319	.6480	.6524	.6640				
20	.5856	.6061	.6265	.6338	.6528				
23	.5735	.5939	.6173	.6275	.6465				
00	.7084	.7084	.7142	.7084	.7055	-150	000	1	3
04	.7085	.7099	.7143	.7070	.7041				
08	.6992	.6992	.7036	.6977	.6962				
12	.6626	.6714	.6816	.6831	.6875				
16	.6455	.6601	.6748	.6748	.6865				
20	.6396	.6572	.6704	.6748	.6894				
23	.6396	.6572	.6748	.6777	.6953				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$ $P_t/P_{t,0}$

$\alpha_1 \backslash y$	2.169	2.369	2.569	2.769	2.969	ϕ_R	ϕ	Rate	Run
00	.7009	.6995	.6980	.6966	.6951	030	000	1	1
04	.7219	.7005	.7005	.6990	.6976				
08	.6971	.7000	.7000	.7000	.7000				
12	.6938	.6981	.7011	.7025	.7055				
16	.6957	.6986	.7059	.7103	.7146				
20	.7006	.7065	.7138	.7211	.7241				
23	.7089	.7133	.7206	.7279	.7308				
00	.7052	.7037	.7023	.6994	.6965	015	000	1	1
04	.7034	.7019	.7005	.6961	.6961				
08	.6941	.6941	.6941	.6926	.6912				
12	.6800	.6815	.6844	.6859	.6868				
16	.6665	.6694	.6766	.6825	.6868				
20	.6539	.6597	.6684	.6786	.6830				
23	.6481	.6539	.6641	.6742	.6800				
00	.6999	.6999	.6970	.6941	.6897	000	000	1	1
04	.7014	.7000	.6956	.6927	.6912				
08	.7003	.6974	.6931	.6902	.6887				
12	.6927	.6898	.6839	.6810	.6825				
16	.6805	.6573	.6631	.6645	.6674				
20	.6166	.6239	.6340	.6428	.6515				
23	.5847	.5934	.6064	.6210	.6326				
00	.6975	.6960	.6946	.6931	.6902	-015	000	1	1
04	.6999	.6984	.6970	.6941	.6912				
08	.7008	.7008	.6994	.6979	.6950				
12	.6989	.6989	.6974	.6974	.6974				
16	.6931	.6946	.6975	.7004	.6990				
20	.6718	.6781	.6878	.6936	.6936				
23	.6437	.6524	.6640	.6757	.6786				
00	.7091	.7062	.7019	.6975	.6931	-030	000	1	1
04	.7160	.7102	.7058	.7043	.7014				
08	.7139	.7110	.7139	.7125	.7067				
12	.7135	.7164	.7135	.7091	.7077				
16	.7115	.7072	.7043	.7072	.7072				
20	.6873	.6873	.6902	.6960	.6975				
23	.6640	.6699	.6742	.6815	.6830				
00	.6946	.6931	.6902	.6888	.6931	-040	000	1	1
04	.6995	.6980	.6995	.7053	.7038				
08	.7038	.7111	.7126	.7111	.7082				
12	.7140	.7140	.7126	.7184	.7198				
16	.7208	.7208	.7179	.7179	.7179				
20	.7058	.7058	.7058	.7073	.7073				
23	.6893	.6908	.6908	.6952	.6952				
00	.6990	.6976	.6961	.6961	.6961	-045	000	1	1
04	.7049	.7049	.7078	.7049	.7005				
08	.7121	.7136	.7121	.7107	.7078				
12	.7121	.7107	.7092	.7092	.7078				
16	.7121	.7121	.7107	.7121	.7121				
20	.7073	.7145	.7131	.7174	.7174				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 229-19 $M_0 = 2.00$

$P_t/P_{t,0}$

α/γ	2.169	2.369	2.569	2.769	2.969	β_H	β	Re	Re
23	.7014	.7029	.7029	.7058	.7073				
00	.6964	.6964	.6964	.6935	.6935	-050	000	1	2
04	.7045	.7031	.7045	.7060	.7031				
08	.7138	.7153	.7138	.7124	.7109				
12	.7163	.7149	.7134	.7134	.7120				
16	.7125	.7110	.7081	.7081	.7081				
20	.7084	.7084	.7069	.7098	.7127				
23	.7000	.7000	.7000	.7044	.7087				
00	.6997	.6982	.6982	.6997	.6997	-055	000	1	2
04	.7069	.7069	.7112	.7098	.7040				
08	.7149	.7173	.7163	.7149	.7134				
12	.7192	.7178	.7163	.7149	.7149				
16	.7178	.7163	.7134	.7149	.7149				
20	.7163	.7120	.7076	.7076	.7076				
23	.7066	.7066	.7037	.7066	.7066				
00	.7013	.6999	.6970	.6970	.6970	-060	000	1	2
04	.7061	.7047	.7061	.7061	.7047				
08	.7159	.7159	.7159	.7159	.7130				
12	.7192	.7192	.7163	.7134	.7134				
16	.7179	.7164	.7135	.7150	.7150				
20	.7126	.7126	.7111	.7111	.7111				
23	.6980	.6994	.6965	.7009	.7038				
00	.7018	.6989	.6960	.6960	.6960	-065	000	1	2
04	.7087	.7087	.7087	.7087	.7058				
08	.7160	.7189	.7175	.7160	.7146				
12	.7164	.7164	.7150	.7135	.7135				
16	.7189	.7160	.7131	.7131	.7131				
20	.7063	.7063	.7049	.7063	.7063				
23	.6916	.6931	.6916	.6975	.7019				
00	.6994	.6979	.6979	.6965	.6965	-070	000	1	2
04	.7087	.7087	.7102	.7087	.7043				
08	.7150	.7150	.7150	.7121	.7091				
12	.7171	.7171	.7156	.7156	.7127				
16	.7116	.7116	.7087	.7102	.7102				
20	.6990	.6990	.6990	.7034	.7034				
23	.6859	.6873	.6859	.6917	.6961				
00	.7022	.7008	.7008	.7022	.6993	-075	000	1	2
04	.7075	.7075	.7090	.7075	.7031				
08	.7149	.7149	.7134	.7120	.7090				
12	.7128	.7099	.7070	.7070	.7070				
16	.7081	.7067	.7067	.7096	.7081				
20	.6955	.6955	.6955	.6999	.7013				
23	.6780	.6809	.6809	.6853	.6926				
00	.6999	.6984	.6999	.6999	.6955	-080	000	1	2
04	.7077	.7091	.7077	.7033	.6989				
08	.7120	.7090	.7061	.7061	.7061				
12	.7082	.7082	.7111	.7082	.7082				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$

$P_t/P_{t,0}$

$\alpha_1 \backslash$	2.169	2.369	2.569	2.769	2.969	ϕ_R	ϕ	$R_{t,k}$	$R_{t,u}$
16	.7080	.7066	.7051	.7051	.7051				
20	.6896	.6911	.6911	.6984	.6998				
23	.6673	.6732	.6761	.6819	.6833				
00	.6998	.6969	.6969	.6940	.6925	-085	000	1	2
04	.7071	.7056	.7027	.7027	.6998				
08	.7075	.7104	.7104	.7075	.7046				
12	.7104	.7104	.7090	.7075	.7061				
16	.7051	.7051	.7037	.7109	.7080				
20	.6814	.6901	.6886	.6930	.6930				
23	.6582	.6611	.6611	.6699	.6756				
00	.6954	.6925	.6954	.6940	.6940	-090	000	1	2
04	.7008	.7037	.7051	.7022	.6993				
08	.7085	.7085	.7085	.7071	.7035				
12	.7099	.7099	.7070	.7128	.7084				
16	.7046	.7104	.7061	.7061	.7031				
20	.6838	.6853	.6824	.6911	.6940				
23	.6436	.6494	.6552	.6669	.6727				
00	.6988	.6959	.6959	.6930	.6930	-095	000	1	2
04	.7027	.7013	.6998	.7027	.7027				
08	.7056	.7056	.7129	.7085	.7027				
12	.7061	.7120	.7090	.7047	.7018				
16	.7076	.7032	.7003	.7032	.7003				
20	.6800	.6814	.6829	.6916	.6945				
23	.6402	.6489	.6562	.6693	.6751				
00	.7032	.7032	.7047	.7032	.6973	-100	000	1	3
04	.7022	.7006	.7037	.7022	.6964				
08	.7091	.7091	.7105	.7032	.6973				
12	.7136	.7136	.7077	.7048	.7018				
16	.7105	.7061	.7032	.7032	.7003				
20	.6772	.6831	.6860	.6933	.6989				
23	.6460	.6563	.6621	.6723	.6752				
00	.6976	.7020	.6962	.6918	.6889	-105	000	1	3
04	.7049	.7020	.6976	.6933	.6903				
08	.7064	.7020	.6991	.6976	.6962				
12	.6995	.6981	.6966	.6981	.6952				
16	.6918	.6933	.6933	.6933	.6845				
20	.6767	.6884	.6796	.6489	.6504				
23	.6205	.5852	.5926	.6073	.6146				
00	.7030	.6987	.6943	.6928	.6884	-110	000	1	3
04	.7056	.6998	.6998	.6953	.6909				
08	.7030	.7001	.6972	.6913	.6884				
12	.6959	.6943	.6899	.6870	.6841				
16	.6859	.6859	.6772	.6684	.6728				
20	.6762	.6707	.6324	.6426	.6455				
23	.5741	.5946	.6020	.6166	.6210				
00	.7006	.6962	.6948	.6918	.6889	-115	000	1	3

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 229-19 $M_o = 2.00$

$P_t/P_{t,o}$

γ c_1	2.169	2.369	2.569	2.769	2.969	P_R	β	$R_{t,b}$	$R_{t,a}$
04	.7032	.7003	.6973	.6944	.6885				
08	.7009	.6980	.6951	.6893	.6849				
12	.6963	.6919	.6846	.6831	.6816				
16	.6846	.6582	.6611	.6655	.6714				
20	.6162	.6279	.6367	.6469	.6513				
23	.5856	.6031	.6090	.6236	.6280				
00	.7006	.6977	.6948	.6918	.6889	-120	000	1	3
04	.7030	.6987	.6972	.6928	.6884				
08	.7001	.6972	.6928	.6884	.6840				
12	.6927	.6840	.6781	.6811	.6796				
16	.6512	.6555	.6598	.6670	.6698				
20	.6242	.6357	.6415	.6545	.6588				
23	.6009	.6155	.6213	.6344	.6373				
00	.7033	.7004	.6990	.6960	.6931	-125	000	1	3
04	.7058	.7014	.6971	.6941	.6883				
08	.7019	.6960	.6902	.6873	.6844				
12	.6844	.6815	.6786	.6800	.6800				
16	.6563	.6621	.6650	.6708	.6738				
20	.6344	.6446	.6475	.6592	.6650				
23	.6198	.6314	.6373	.6490	.6519				
00	.7029	.7014	.7000	.6956	.6912	-130	000	1	3
04	.7028	.7014	.6984	.6955	.6897				
08	.7000	.6941	.6927	.6912	.6883				
12	.6810	.6825	.6825	.6839	.6839				
16	.6626	.6699	.6713	.6772	.6786				
20	.6466	.6538	.6568	.6655	.6684				
23	.6364	.6466	.6509	.6640	.6655				
00	.7034	.7019	.7005	.6976	.6917	-135	000	1	3
04	.7034	.7019	.6990	.6947	.6917				
08	.6967	.6938	.6938	.6923	.6923				
12	.6801	.6831	.6860	.6875	.6875				
16	.6684	.6757	.6786	.6845	.6859				
20	.6587	.6674	.6689	.6791	.6791				
23	.6524	.6626	.6640	.6757	.6786				
00	.7025	.6996	.6981	.6938	.6908	-150	000	1	3
04	.7026	.7011	.7011	.6982	.6953				
08	.6948	.6962	.6977	.6977	.6962				
12	.6904	.6934	.6963	.6992	.7022				
16	.6894	.6953	.6997	.7070	.7070				
20	.6924	.7011	.7041	.7129	.7129				
23	.6982	.7055	.7070	.7158	.7129				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$

$P_t/P_{t,0}$

γ	3.169	3.369	ϕ_R	ϕ	Stake	Run
00	.6893	.6907	030	000	1	1
04	.6932	.6932				
08	.7000	.6971				
12	.7084	.7084				
16	.7161	.7176				
20	.7255	.7270				
23	.7308	.7323				
00	.6907	.6921	015	000	1	1
04	.6917	.6844				
08	.6897	.6897				
12	.6902	.6917				
16	.6883	.6926				
20	.6830	.6873				
23	.6771	.6829				
00	.6839	.6854	000	000	1	1
04	.6854	.6796				
08	.6858	.6844				
12	.6796	.6810				
16	.6689	.6747				
20	.6529	.6645				
23	.6340	.6413				
00	.6844	.6844	-015	000	1	1
04	.6868	.6796				
08	.6892	.6892				
12	.6960	.6902				
16	.6946	.6902				
20	.6805	.6834				
23	.6699	.6524				
00	.6873	.6873	-030	000	1	1
04	.6941	.6854				
08	.7008	.6965				
12	.7048	.7048				
16	.7043	.7028				
20	.6917	.6990				
23	.6815	.6873				
00	.6931	.6902	-040	000	1	1
04	.6980	.6893				
08	.7053	.7126				
12	.7198	.7184				
16	.7120	.7120				
20	.7000	.7000				
23	.6849	.6908				
00	.6903	.6874	-045	000	1	1
04	.6961	.6888				
08	.7034	.7019				
12	.7063	.7092				
16	.7092	.7092				
20	.7116	.7102				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR ORL TEST 289-19 $M_0 = 2.00$

$P_t'/P_{t,0}$			ϕ_R	ϕ	Rake	Run
α_1	y					
	3.169	3.369				
23	.6971	.6971				
00	.6920	.6906	-050	000	1	2
04	.6973	.6900				
08	.7095	.7066				
12	.7090	.7076				
16	.7052	.7052				
20	.7055	.7055				
23	.7072	.7072				
00	.6924	.6895	-055	000	1	2
04	.6997	.6924				
08	.7105	.7076				
12	.7134	.7120				
16	.7105	.7105				
20	.7047	.7047				
23	.6949	.6949				
00	.6941	.6911	-060	000	1	2
04	.6989	.6930				
08	.7101	.7057				
12	.7120	.7120				
16	.7121	.7106				
20	.7053	.7067				
23	.6980	.6965				
00	.6916	.6887	-065	000	1	2
04	.7014	.6956				
08	.7116	.7087				
12	.7121	.7121				
16	.7087	.7037				
20	.6990	.6990				
23	.6960	.6960				
00	.6921	.6877	-070	000	1	2
04	.7000	.6941				
08	.7077	.7048				
12	.7083	.7068				
16	.7058	.7073				
20	.7005	.7035				
23	.6917	.6902				
00	.6935	.6906	-075	000	1	2
04	.6973	.6901				
08	.7047	.7018				
12	.7070	.7041				
16	.7052	.7037				
20	.6984	.6999				
23	.6897	.6897				
00	.6897	.6868	-080	000	1	2
04	.6931	.6873				
08	.7047	.7003				
12	.7067	.7053				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR QAL TEST 289-19 $M_o = 2.00$

$\alpha_1 \backslash y$	$P_t/P_{t,o}$	$P_t/P_{t,o}$	ϕ_R	ϕ	$P_{t,o}$	$P_{t,o}$
	3.169	3.369				
16	.7051	.7066				
20	.6954	.6940				
23	.6790	.6804				
00	.6882	.6882	-085	000	1	2
04	.6954	.6882				
08	.7031	.6988				
12	.7090	.7046				
16	.7022	.6993				
20	.6930	.6930				
23	.6756	.6770				
00	.6882	.6867	-090	000	1	2
04	.6935	.6906				
08	.7056	.6969				
12	.7041	.6997				
16	.6988	.6959				
20	.6940	.6911				
23	.6756	.6785				
00	.6915	.6901	-095	000	1	2
04	.6940	.6853				
08	.6969	.6911				
12	.6989	.6945				
16	.6974	.6945				
20	.6901	.6858				
23	.6766	.6751				
00	.6885	.6856	-100	000	1	3
04	.6875	.6861				
08	.6914	.6870				
12	.6959	.6900				
16	.6959	.6900				
20	.6893	.6849				
23	.6903	.6859				
00	.6830	.6845	-105	000	1	3
04	.6874	.6816				
08	.6903	.6859				
12	.6893	.6835				
16	.6728	.6757				
20	.6562	.6518				
23	.6234	.6293				
00	.6826	.6826	-110	000	1	3
04	.6880	.6777				
08	.6855	.6826				
12	.6841	.6841				
16	.6728	.6742				
20	.6528	.6558				
23	.6313	.6342				
00	.6816	.6831	-115	000	1	3

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 239-19 $M_0 = 2.00$

$P_t/P_{t,0}$					
α/γ	3.169	3.369	β_R	β	β_{R0}
04	.6841	.6768			
08	.6835	.6820			
12	.6816	.6846			
16	.6758	.6772			
20	.6572	.6601			
23	.6382	.6411			
00	.6816	.6831	-120	000	1 3
04	.6826	.6767			
08	.6826	.6826			
12	.6811	.6811			
16	.6784	.6798			
20	.6660	.6674			
23	.6475	.6505			
00	.6844	.6844	-125	000	1 3
04	.6825	.6767			
08	.6830	.6815			
12	.6815	.6830			
16	.6796	.6825			
20	.6723	.6738			
23	.6606	.6636			
00	.6854	.6883	-130	000	1 3
04	.6868	.6810			
08	.6869	.6854			
12	.6869	.6869			
16	.6844	.6859			
20	.6801	.6830			
23	.6757	.6772			
00	.6859	.6859	-135	000	1 3
04	.6888	.6844			
08	.6908	.6908			
12	.6918	.6918			
16	.6933	.6933			
20	.6879	.6908			
23	.6903	.6918			
00	.6864	.6879	-150	000	1 3
04	.6924	.6894			
08	.6977	.6948			
12	.7051	.7051			
16	.7158	.7158			
20	.7217	.7217			
23	.7246	.7275			

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_o = 2.00$

$P_t/P_{t,o}$

α/y	0.069	0.269	0.469	0.669	0.869	ϕ_R	ϕ	Rate	Run
00	.7082	.7082	.7067	.7067	.7038	030	000	5	1
04	.7034	.7034	.7019	.7019	.7005				
08	.6971	.6971	.6986	.6986	.7000				
12	.7084	.7098	.7128	.7142	.7157				
16	.7307	.7336	.7380	.7409	.7438				
20	.7563	.7694	.7782	.7797	.7811				
23	.7806	.7996	.8084	.8084	.8084				
00	.7110	.7125	.7096	.7096	.7067	015	000	5	1
04	.7063	.7063	.7049	.7034	.7034				
08	.7101	.7086	.7072	.7072	.7057				
12	.7324	.7280	.7237	.7222	.7222				
16	.7609	.7551	.7537	.7537	.7537				
20	.7862	.7949	.7964	.7920	.7920				
23	.8135	.8251	.8251	.8208	.8193				
00	.7072	.7072	.7072	.7086	.7072	000	000	5	1
04	.7058	.7058	.7029	.7029	.7029				
08	.7148	.7119	.7105	.7076	.7090				
12	.7393	.7349	.7291	.7247	.7247				
16	.7676	.7618	.7589	.7575	.7575				
20	.7909	.8010	.7996	.7952	.7938				
23	.8228	.8330	.8286	.8228	.8199				
00	.7077	.7062	.7048	.7048	.7048	-015	000	5	1
04	.7043	.7043	.7028	.6999	.6999				
08	.7067	.7081	.7067	.7052	.7037				
12	.7279	.7294	.7250	.7221	.7207				
16	.7542	.7542	.7528	.7528	.7528				
20	.7764	.7923	.7909	.7865	.7865				
23	.8037	.8226	.8197	.8168	.8124				
00	.7077	.7062	.7048	.7033	.7019	-030	000	5	1
04	.7014	.7014	.7014	.7000	.7000				
08	.6921	.6979	.6979	.6994	.6994				
12	.7004	.7120	.7106	.7106	.7106				
16	.7159	.7333	.7319	.7333	.7362				
20	.7309	.7644	.7659	.7673	.7673				
23	.7484	.7920	.7935	.7935	.7906				
00	.7062	.7062	.7033	.6990	.6975	-040	000	5	1
04	.6995	.6995	.6995	.6966	.6936				
08	.6791	.6878	.6907	.6907	.6907				
12	.6733	.6966	.6980	.6980	.6980				
16	.6815	.7120	.7135	.7179	.7208				
20	.6898	.7364	.7437	.7480	.7509				
23	.6995	.7623	.7666	.7710	.7798				
00	.7063	.7078	.7019	.6961	.7049	-045	000	5	1
04	.6990	.7005	.6976	.6932	.6932				
08	.6713	.6830	.6844	.6844	.6844				
12	.6553	.6830	.6874	.6903	.6903				
16	.6558	.6961	.6990	.7063	.7165				
20	.6592	.7174	.7247	.7335	.7451				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$

$\alpha_1 \backslash \gamma$	0.069	0.269	0.469	0.669	0.869	ϕ_R	ϕ	R_{ake}	R_{ua}
23	.6636	.7378	.7451	.7611	.7670				
00	.7037	.7037	.7008	.6949	.7008	-050	000	5	2
04	.6987	.6987	.6973	.6915	.6944				
08	.6688	.6790	.6819	.6804	.6833				
12	.6392	.6741	.6800	.6843	.6887				
16	.6324	.6819	.6863	.6950	.7081				
20	.6316	.6982	.7098	.7257	.7359				
23	.6308	.7159	.7274	.7491	.7620				
00	.7055	.7055	.6997	.6982	.7069	-055	000	5	2
04	.6968	.6997	.6982	.6939	.7011				
08	.6683	.6741	.6770	.6756	.6872				
12	.6203	.6625	.6683	.6756	.6887				
16	.6058	.6640	.6727	.6858	.7003				
20	.5999	.6756	.6901	.7149	.7338				
23	.5933	.6906	.7066	.7313	.7501				
00	.7072	.7072	.7028	.7086	.7174	-060	000	5	2
04	.6930	.6960	.6945	.7018	.7105				
08	.6664	.6780	.6766	.6839	.6941				
12	.6014	.6494	.6581	.6741	.6872				
16	.5808	.6479	.6581	.6800	.7004				
20	.5696	.6528	.6703	.6994	.7199				
23	.5579	.6644	.6849	.7155	.7345				
00	.7047	.7047	.7003	.7090	.7163	-065	000	5	2
04	.6927	.6970	.6956	.7058	.7131				
08	.6635	.6766	.6795	.6868	.6956				
12	.5721	.6290	.6421	.6639	.6814				
16	.5481	.6255	.6401	.6664	.6868				
20	.5310	.6245	.6479	.6815	.7019				
23	.5167	.6333	.6639	.7048	.7150				
00	.7037	.7037	.7067	.7168	.7139	-070	000	5	2
04	.6927	.6970	.6985	.7116	.7116				
08	.6596	.6742	.6756	.6887	.6916				
12	.5562	.6162	.6308	.6571	.6747				
16	.5160	.6021	.6211	.6532	.6737				
20	.4959	.5982	.6289	.6727	.6844				
23	.4784	.6026	.6391	.6829	.6946				
00	.7051	.7037	.7109	.7167	.7124	-075	000	5	2
04	.6901	.6930	.7017	.7133	.7104				
08	.6596	.6741	.6872	.7018	.6960				
12	.6229	.5997	.6229	.6591	.6635				
16	.4912	.5815	.6106	.6513	.6601				
20	.4595	.5702	.6066	.6518	.6664				
23	.4406	.5717	.6125	.6591	.6751				
00	.7043	.7028	.7101	.7159	.7101	-080	000	5	2
04	.6931	.6946	.7048	.7135	.7106				
08	.6596	.6741	.6887	.7032	.6974				
12	.6352	.6090	.6177	.6528	.6615				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19. $M_0 = 2.00$

$$P_t/P_{t,0}$$

γ	0.069	0.269	0.469	0.669	0.869	P_R	β	$\frac{A}{A_0}$	$\frac{H}{H_0}$
16	.5715	.5584	.5947	.6354	.6470				
20	.4236	.5414	.5806	.6271	.6446				
23	.4030	.5381	.5831	.6325	.6499				
00	.7042	.7027	.7114	.7173	.7114	-085	000	5	2
04	.6940	.6969	.7085	.7173	.7114				
08	.6611	.6785	.6930	.7075	.7075				
12	.6393	.6552	.6799	.6465	.6523				
16	.5773	.6063	.5744	.6180	.6310				
20	.4694	.5101	.5522	.6030	.6233				
23	.4288	.5014	.5507	.6044	.6262				
00	.7056	.7027	.7114	.7187	.7114	-090	000	5	2
04	.6935	.6979	.7080	.7167	.7124				
08	.6649	.6766	.6940	.7056	.7027				
12	.6461	.6606	.6751	.6954	.6954				
16	.5769	.6059	.6262	.6015	.6175				
20	.5079	.4803	.5254	.5792	.6024				
23	.4723	.4665	.5188	.5769	.6001				
00	.7046	.7046	.7133	.7206	.7133	-095	000	5	2
04	.6911	.6969	.7085	.7158	.7100				
08	.6664	.6766	.6911	.7056	.7013				
12	.6261	.6567	.6683	.6872	.6858				
16	.5243	.5999	.6189	.6509	.6029				
20	.5112	.5461	.5228	.5548	.5796				
23	.4741	.4726	.4886	.5498	.5746				
00	.7032	.7076	.7120	.7150	.7091	-100	000	5	3
04	.7022	.7081	.7125	.7155	.7081				
08	.6856	.7003	.7076	.7120	.7061				
12	.6665	.6841	.6959	.7018	.6989				
16	.5210	.6503	.6635	.6641	.6841				
20	.4093	.5960	.6135	.6456	.6529				
23	.4070	.5939	.6144	.6450	.6524				
00	.7049	.7064	.7137	.7195	.7122	-105	000	5	3
04	.6786	.6991	.7049	.7137	.7093				
08	.6728	.6816	.6903	.7035	.7006				
12	.2984	.6485	.6616	.6806	.6806				
16	.3368	.5837	.6027	.6436	.6597				
20	.2715	.5377	.5494	.5802	.5875				
23	.2681	.5059	.5236	.5559	.5192				
00	.7060	.7045	.7118	.7191	.7133	-110	000	5	3
04	.6645	.6968	.7056	.7174	.7115				
08	.6562	.6811	.6928	.7060	.7016				
12	.3498	.6489	.6591	.6811	.6811				
16	.3361	.5780	.6159	.6407	.6480				
20	.3225	.5286	.5359	.5666	.5783				
23	.3733	.4993	.5111	.5433	.5521				
00	.7065	.7036	.7123	.7197	.7138	-115	000	5	3

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$

α_1	$P_t/P_{t,0}$	0.069	0.269	0.469	0.669	0.869	β_R	β	R_{ts}	R_{th}
04	.6459	.6973	.7061	.7179	.7120					
08	.5990	.6820	.6936	.7082	.7053					
12	.4542	.6494	.6596	.6831	.6846					
16	.3207	.5980	.6317	.6464	.6435					
20	.3334	.5239	.5341	.5605	.5693					
23	.3663	.4920	.5008	.5300	.5417					
✓00	.7065	.7036	.7109	.7211	.7153	-120	000	5	3	
04	.6197	.6972	.7060	.7191	.7147					
08	.5056	.6826	.6957	.7118	.7074					
12	.4738	.6431	.6563	.6825	.6854					
16	.3361	.5882	.6340	.6397	.6426					
✓20	.3269	.5347	.5794	.6011	.5967					
23	.3446	.4990	.5150	.5310	.5281					
00	.7077	.7033	.7077	.7106	.7164	-125	000	5	3	
04	.5864	.6971	.7058	.7204	.7174					
08	.3950	.6830	.6960	.7106	.7077					
12	.5099	.6204	.6495	.6800	.6859					
16	.2659	.5077	.6140	.6271	.6359					
20	.3242	.4320	.5878	.5922	.5922					
23	.3264	.3935	.5351	.5439	.5380					
00	.7058	.7043	.7029	.7087	.7189	-130	000	5	3	
04	.5589	.6984	.7057	.7115	.7188					
08	.3242	.6839	.6971	.7145	.7116					
12	.4305	.5135	.6417	.6796	.6869					
16	.2516	.4921	.5139	.6072	.6305					
20	.2720	.3959	.5431	.5708	.5751					
23	.2428	.3988	.4964	.5227	.5197					
00	.7063	.7034	.7034	.7092	.7151	-135	000	5	3	
04	.5314	.7005	.7034	.7092	.7194					
08	.2786	.6850	.6981	.7113	.7128					
12	.3508	.3991	.6348	.6787	.6889					
16	.3222	.5443	.4479	.5720	.6202					
20	.2581	.4409	.4716	.5227	.5549					
23	.2974	.4990	.3836	.4683	.4858					
00	.7084	.7084	.7084	.7055	.7025	-150	000	5	3	
04	.5034	.7070	.7070	.7041	.7070					
08	.3347	.6860	.6977	.7065	.7094					
12	.3090	.3295	.6523	.6846	.7022					
16	.5576	.1928	.1737	.5444	.6425					
20	.5737	.4873	.2060	.3144	.3818					
23	.5151	.3525	.2118	.2734	.3085					

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$

$P_t/P_{t,0}$

$\alpha \backslash y$	1.069	1.269	1.469	1.669	β_R	ϕ	Rake	Run
00	.7009	.7009	.6980	.6980	030	000	5	1
04	.7005	.6990	.6976	.6976				
08	.7015	.7030	.7044	.7059				
12	.7201	.7245	.7259	.7274				
16	.7497	.7511	.7526	.7555				
20	.7826	.7826	.7841	.7855				
23	.8024	.8054	.8040	.8054				
00	.7067	.7052	.7037	.7037	015	000	5	1
04	.7019	.7019	.7019	.7034				
08	.7072	.7086	.7101	.7130				
12	.7280	.7309	.7324	.7339				
16	.7566	.7580	.7595	.7624				
20	.7906	.7906	.7906	.7920				
23	.8135	.8121	.8106	.8106				
00	.7043	.7043	.7014	.6999	000	000	5	1
04	.7014	.7014	.7029	.7029				
08	.7090	.7119	.7119	.7148				
12	.7306	.7320	.7349	.7378				
16	.7589	.7604	.7618	.7647				
20	.7909	.7909	.7909	.7923				
23	.8141	.8127	.8127	.8112				
00	.7048	.7019	.6990	.6990	-015	000	5	1
04	.7028	.6999	.6990	.6999				
08	.7067	.7096	.7110	.7110				
12	.7250	.7294	.7308	.7323				
16	.7542	.7571	.7600	.7615				
20	.7836	.7851	.7865	.7880				
23	.8066	.8066	.8080	.8065				
00	.6946	.6931	.7004	.7004	-030	000	5	1
04	.6941	.6898	.6955	.7000				
08	.6965	.6950	.6979	.7067				
12	.7135	.7150	.7193	.7251				
16	.7377	.7406	.7508	.7522				
20	.7659	.7746	.7775	.7804				
23	.7920	.7978	.7993	.8051				
00	.7004	.7077	.7048	.7004	-040	000	5	1
04	.6980	.7053	.7024	.6995				
08	.6980	.7096	.7096	.7082				
12	.7111	.7257	.7242	.7242				
16	.7339	.7484	.7484	.7469				
20	.7684	.7728	.7728	.7699				
23	.7900	.7929	.7914	.7870				
00	.7092	.7049	.7005	.6976	-045	000	5	1
04	.7063	.7019	.6976	.6961				
08	.7063	.7034	.7019	.7019				
12	.7151	.7165	.7165	.7165				
16	.7355	.7384	.7384	.7384				
20	.7597	.7626	.7626	.7611				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR CAL TEST 289-19 $M_0 = 2.00$

$P_t/P_{t,0}$					β_R	β	$E_{t,0}$	$E_{t,0}$
γ	1.069	1.269	1.469	1.669				
23	.7772	.7815	.7801	.7772				
00	.7066	.7022	.6979	.6964	-050	000	5	2
04	.7060	.7002	.6958	.6944				
08	.7037	.6993	.6993	.6993				
12	.7090	.7105	.7105	.7120				
16	.7256	.7285	.7289	.7314				
20	.7503	.7532	.7547	.7547				
23	.7564	.7707	.7721	.7707				
00	.7040	.6982	.6982	.6968	-055	000	5	2
04	.7011	.6968	.6953	.6968				
08	.6974	.6950	.6960	.6989				
12	.7018	.7032	.7076	.7120				
16	.7163	.7207	.7236	.7280				
20	.7381	.7440	.7483	.7483				
23	.7521	.7603	.7647	.7618				
00	.7028	.6999	.6999	.6999	-060	000	5	2
04	.6989	.6945	.6945	.6960				
08	.6941	.6941	.6955	.6984				
12	.6945	.6960	.7032	.7061				
16	.7062	.7121	.7179	.7208				
20	.7272	.7359	.7403	.7418				
23	.7402	.7534	.7563	.7549				
00	.7003	.7003	.6989	.6974	-065	000	5	2
04	.7014	.6970	.6970	.6970				
08	.6897	.6927	.6956	.6985				
12	.6844	.6902	.6961	.7004				
16	.6956	.7058	.7116	.7146				
20	.7122	.7253	.7312	.7312				
23	.7252	.7398	.7456	.7427				
00	.7037	.7023	.6994	.6979	-070	000	5	2
04	.7014	.7014	.7000	.7000				
08	.6844	.6902	.6931	.6946				
12	.6805	.6878	.6937	.6981				
16	.6854	.6970	.7043	.7073				
20	.6990	.7151	.7209	.7209				
23	.7107	.7268	.7326	.7326				
00	.7051	.7051	.7051	.7051	-075	000	5	2
04	.7002	.6988	.6988	.6988				
08	.6858	.6887	.6930	.6945				
12	.6751	.6838	.6896	.6925				
16	.6761	.6892	.6965	.6994				
20	.6839	.7013	.7072	.7101				
23	.6941	.7130	.7203	.7188				
00	.7043	.7043	.7043	.7028	-080	000	5	2
04	.7048	.7019	.7019	.7019				
08	.6901	.6901	.6916	.6945				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$

$P_t/P_{t,0}$					ϕ_R	ϕ	$R_{t/R}$	$R_{t/R}$
α_1/γ	1.069	1.269	1.469	1.669				
12	.6732	.6819	.6876	.6922				
16	.6673	.6804	.6877	.6906				
20	.6707	.6867	.6940	.6969				
23	.6761	.6964	.7051	.7051				
00	.7056	.7056	.7056	.7042	-085	000	5	2
04	.7085	.7056	.7056	.7042				
08	.6959	.6944	.6930	.6959				
12	.6869	.6756	.6814	.6857				
16	.6557	.6673	.6761	.6819				
20	.6523	.6727	.6814	.6843				
23	.6552	.6785	.6872	.6901				
00	.7071	.7071	.7071	.7056	-090	000	5	2
04	.7095	.7080	.7051	.7051				
08	.6984	.6969	.6940	.6940				
12	.6635	.6707	.6780	.6809				
16	.6436	.6582	.6683	.6727				
20	.6358	.6562	.6678	.6707				
23	.6335	.6582	.6712	.6756				
00	.7075	.7061	.7061	.7046	-095	000	5	2
04	.7085	.7085	.7056	.7056				
08	.6998	.6984	.6969	.6940				
12	.6581	.6654	.6712	.6770				
16	.6334	.6509	.6596	.6654				
20	.6159	.6392	.6522	.6567				
23	.6125	.6402	.6547	.6576				
00	.7061	.7061	.7061	.7061	-100	000	5	3
04	.7067	.7067	.7067	.7052				
08	.7076	.7076	.7061	.7047				
12	.7018	.7018	.7003	.6989				
16	.6870	.6679	.6709	.6753				
20	.6251	.6426	.6529	.6587				
23	.6261	.6436	.6524	.6582				
00	.7079	.7079	.7079	.7064	-105	000	5	3
04	.7079	.7079	.7079	.7049				
08	.7020	.7020	.7020	.6991				
12	.6879	.6893	.6893	.6747				
16	.6144	.6319	.6436	.6494				
20	.5772	.6050	.6197	.6255				
23	.5661	.5955	.6102	.6161				
00	.7060	.7060	.7045	.7030	-110	000	5	3
04	.7086	.7086	.7086	.7056				
08	.7030	.7030	.7030	.7016				
12	.6885	.6914	.6929	.6885				
16	.6742	.6844	.6934	.6993				
20	.5914	.5885	.6031	.6104				
23	.5375	.5712	.5873	.5961				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR CAL TEST 289-19 $M_0 = 2.00$

$P_t/P_{t,0}$

α/γ	1.069	1.269	1.469	1.669	ϕ_R	ϕ	$R_{t,0}$	Run
✓00	.7065	.7065	.7036	.7036	-115	000	5	3
04	.7091	.7091	.7091	.7076				
08	.7053	.7053	.7038	.6995				
12	.6904	.6919	.6934	.6904				
16	.6699	.6772	.6816	.6347				
20	.6015	.6030	.5927	.6015				
23	.5622	.5520	.5695	.5797				
✓00	.7065	.7065	.7065	.7036	-120	000	5	3
04	.7089	.7089	.7074	.7045				
08	.7060	.7060	.7030	.7001				
12	.6913	.6927	.6927	.6898				
16	.6598	.6741	.6770	.6755				
✓20	.5953	.6155	.6256	.5939				
23	.5514	.5747	.5514	.5631				
00	.7077	.7077	.7048	.7019	-125	000	5	3
04	.7087	.7087	.7058	.7029				
08	.7033	.7048	.7019	.7019				
12	.6902	.6931	.6931	.6902				
16	.6577	.6738	.6781	.6767				
20	.6213	.6388	.6505	.6563				
23	.5439	.5614	.5760	.5687				
00	.7087	.7058	.7029	.7000	-130	000	5	3
04	.7101	.7072	.7043	.7014				
08	.7058	.7043	.7029	.7014				
12	.6912	.6941	.6941	.6941				
16	.6553	.6713	.6801	.6801				
20	.6043	.6247	.6422	.6568				
23	.5314	.5547	.5751	.5883				
00	.7121	.7063	.7005	.6990	-135	000	5	3
04	.7121	.7063	.7034	.7019				
08	.7084	.7055	.7040	.7025				
12	.6948	.6948	.6948	.6977				
16	.6553	.6712	.6816	.6933				
20	.5914	.6236	.6528	.6616				
23	.5092	.5413	.5998	.6188				
00	.7055	.7040	.7113	.7084	-150	000	5	3
04	.7099	.7173	.7143	.7099				
08	.7167	.7138	.7109	.7109				
12	.7080	.7051	.7110	.7080				
16	.6880	.6924	.6938	.6753				
20	.5883	.6308	.6513	.6601				
23	.4404	.5341	.5795	.6074				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_o = 2.00$

$$P_t'/P_{t,o}$$

$\alpha_i \backslash y$	2.069	2.269	2.469	2.669	2.869	ϕ_R	ϕ	Rate	Run
00	.6951	.6907	.6878	.6907	.6907	030	000	5	1
04	.6976	.6976	.6932	.6932	.6903				
08	.7073	.7088	.7088	.7088	.7088				
12	.7303	.7303	.7332	.7347	.7332				
16	.7599	.7570	.7599	.7613	.7628				
20	.7885	.7855	.7885	.7885	.7929				
23	.8098	.8054	.8084	.8069	.7104				
00	.7023	.6994	.6979	.6950	.6936	015	000	5	1
04	.7034	.7019	.7019	.7019	.7005				
08	.7159	.7159	.7173	.7202	.7188				
12	.7368	.7382	.7397	.7426	.7455				
16	.7653	.7653	.7653	.7667	.7755				
20	.7920	.7906	.7920	.7949	.7135				
23	.8106	.8092	.8077	.7061	.7076				
00	.6984	.6970	.6941	.6926	.6897	000	000	5	1
04	.7029	.7014	.6985	.7000	.7000				
08	.7177	.7177	.7177	.7207	.7207				
12	.7408	.7408	.7408	.7437	.7495				
16	.7647	.7662	.7647	.7676	.7764				
20	.7938	.7909	.7880	.7967	.7081				
23	.8112	.8083	.7735	.7037	.7023				
00	.6990	.6960	.6917	.6902	.6888	-015	000	5	1
04	.7014	.7014	.6970	.6984	.6970				
08	.7125	.7125	.7125	.7168	.7154				
12	.7352	.7352	.7352	.7395	.7410				
16	.7629	.7629	.7615	.7629	.7717				
20	.7894	.7865	.7836	.7865	.7952				
23	.8066	.8051	.8022	.6990	.6946				
00	.7091	.7048	.7004	.6960	.6931	-030	000	5	1
04	.7102	.7087	.7043	.7043	.7014				
08	.7110	.7183	.7183	.7197	.7183				
12	.7324	.7382	.7368	.7397	.7368				
16	.7624	.7624	.7595	.7624	.7595				
20	.7891	.7862	.7848	.7848	.7818				
23	.8066	.8037	.8008	.8008	.6917				
00	.6975	.6960	.6960	.6931	.6931	-040	000	5	1
04	.6980	.6980	.6966	.6995	.6995				
08	.7067	.7067	.7096	.7126	.7126				
12	.7242	.7242	.7271	.7315	.7315				
16	.7469	.7469	.7484	.7523	.7513				
20	.7684	.7713	.7713	.7742	.7728				
23	.7841	.7870	.7856	.7900	.7870				
00	.6976	.6961	.6961	.6947	.6917	-045	000	5	1
04	.6976	.6976	.6961	.6990	.6990				
08	.7034	.7063	.7078	.7107	.7121				
12	.7194	.7223	.7238	.7282	.7282				
16	.7413	.7442	.7457	.7500	.7471				
20	.7626	.7655	.7655	.7699	.7684				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR CAL TEST 289-19 $M_0 = 2.00$

$P_t^i / P_{t,0}$

β	2.069	2.269	2.469	2.669	2.869	β_R	β	$R_{t,0}$	$R_{t,i}$
23	.7772	.7815	.7786	.7830	.7815				
00	.6964	.6949	.6949	.6935	.6906	-050	000	5	2
04	.6958	.6958	.6958	.6973	.6958				
08	.7022	.7037	.7051	.7080	.7095				
12	.7163	.7192	.7207	.7251	.7251				
16	.7343	.7401	.7401	.7445	.7445				
20	.7561	.7619	.7605	.7648	.7648				
23	.7693	.7765	.7750	.7779	.7765				
00	.6968	.6953	.6939	.6924	.6924	-055	000	5	2
04	.6968	.6968	.6968	.6982	.6968				
08	.7018	.7032	.7047	.7076	.7076				
12	.7134	.7163	.7192	.7221	.7236				
16	.7294	.7352	.7352	.7411	.7425				
20	.7483	.7556	.7556	.7600	.7585				
23	.7603	.7690	.7661	.7690	.7690				
00	.6984	.6970	.6955	.6941	.6941	-060	000	5	2
04	.6960	.6960	.6960	.6960	.6960				
08	.6999	.7013	.7013	.7057	.7072				
12	.7090	.7149	.7149	.7207	.7207				
16	.7237	.7296	.7296	.7354	.7368				
20	.7418	.7476	.7476	.7520	.7534				
23	.7520	.7607	.7593	.7651	.7636				
00	.6960	.6945	.6930	.6930	.6916	-065	000	5	2
04	.6970	.6970	.6956	.6970	.6956				
08	.7000	.7014	.7014	.7043	.7043				
12	.7033	.7062	.7091	.7135	.7164				
16	.7160	.7219	.7233	.7292	.7306				
20	.7297	.7399	.7399	.7458	.7472				
23	.7398	.7514	.7500	.7543	.7529				
00	.6965	.6950	.6936	.6921	.6906	-070	000	5	2
04	.7000	.6970	.6970	.6970	.6956				
08	.6960	.6975	.6989	.7019	.7019				
12	.6995	.7039	.7068	.7112	.7127				
16	.7087	.7160	.7189	.7248	.7262				
20	.7195	.7297	.7297	.7370	.7355				
23	.7282	.7414	.7370	.7443	.7443				
00	.7022	.7008	.6964	.6964	.6949	-075	000	5	2
04	.6973	.6959	.6930	.6973	.6959				
08	.6974	.6974	.6960	.7018	.7032				
12	.6954	.7012	.6997	.7070	.7099				
16	.7008	.7096	.7096	.7183	.7198				
20	.7086	.7203	.7174	.7261	.7276				
23	.7159	.7305	.7247	.7334	.7334				
00	.7013	.6984	.6955	.6984	.6970	-080	000	5	2
04	.7004	.6989	.6960	.6989	.6975				
08	.6960	.6974	.6945	.7003	.7003				
12	.6951	.6994	.6994	.7053	.7067				

APPENDIX B (CONTINUED).

INDICATED TOTAL PRESSURE RATIOS FOR QAL TEST 289-19 $M_0 = 2.00$

$\alpha_1 \backslash y$	2.069	2.269	2.469	2.669	2.869	ϕ_R	ϕ	Re	Run
16	.6935	.7022	.7008	.7109	.7095				
20	.6969	.7085	.7056	.7143	.7173				
23	.7022	.7167	.7138	.7196	.7211				
00	.7027	.6998	.6969	.6984	.6969	-085	000	5	2
04	.7027	.7027	.6998	.6998	.6984				
08	.6973	.6988	.6959	.6973	.6988				
12	.6886	.6930	.6930	.6988	.7002				
16	.6848	.6935	.6935	.7008	.7022				
20	.6828	.6959	.6944	.7046	.7061				
23	.6857	.7017	.6973	.7046	.7046				
00	.7056	.7042	.7027	.7027	.6984	-090	000	5	2
04	.7051	.7037	.6993	.6993	.6993				
08	.6954	.6954	.6940	.6969	.6969				
12	.6838	.6896	.6896	.6954	.6954				
16	.6756	.6857	.6857	.6930	.6959				
20	.6693	.6838	.6795	.6911	.6940				
23	.6698	.6872	.6799	.6915	.6930				
00	.7075	.7031	.6988	.6988	.6973	-095	000	5	2
04	.7042	.6998	.6969	.6984	.6969				
08	.6940	.6940	.6896	.6940	.6940				
12	.6785	.6843	.6879	.6916	.6916				
16	.6654	.6770	.6756	.6843	.6872				
20	.6567	.6712	.6683	.6800	.6829				
23	.6518	.6722	.6664	.6766	.6766				
00	.7047	.7032	.7003	.7003	.6973	-100	000	5	3
04	.7037	.7008	.6978	.6978	.6964				
08	.7047	.7032	.7003	.7003	.6973				
08	.6959	.6959	.6930	.6959	.6944				
12	.6768	.6826	.6826	.6885	.6885				
16	.6602	.6689	.6689	.6762	.6806				
16	.6597	.6699	.6699	.6772	.6816				
20	.6450	.6626	.6596	.6714	.6728				
23	.6358	.6577	.6533	.6636	.6636				
00	.7049	.7020	.6976	.6991	.6962	-105	000	5	3
04	.7049	.7020	.6962	.6991	.6962				
08	.6962	.6947	.6903	.6918	.6874				
12	.6733	.6777	.6733	.6791	.6806				
16	.6494	.6597	.6582	.6684	.6713				
20	.6255	.6445	.6416	.6533	.6562				
23	.6131	.6366	.6337	.6440	.6454				
00	.7030	.7001	.6957	.6972	.6972	-110	000	5	3
04	.7056	.7027	.6983	.6968	.6939				
08	.6972	.6943	.6870	.6884	.6855				
12	.6738	.6738	.6709	.6767	.6767				
16	.6422	.6538	.6538	.6626	.6655				
20	.6119	.6324	.6324	.6441	.6470				
23	.5946	.6196	.6181	.6284	.6298				
00	.7036	.7006	.6962	.6962	.6918	-115	000	5	3

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$

$P_t/P_{t,0}$

α_1	2.069	2.269	2.469	2.669	2.869	α_R	β	Rate	Run
04	.7047	.7003	.6959	.6944	.6914				
08	.6980	.6936	.6878	.6893	.6864				
12	.6846	.6787	.6728	.6758	.6758				
16	.6376	.6494	.6508	.6582	.6611				
20	.6045	.6250	.6250	.6367	.6396				
23	.5797	.6061	.6046	.6177	.6236				
✓00	.7006	.6977	.6948	.6948	.6918	-120	000	5	3
04	.7016	.6987	.6943	.6943	.6913				
08	.6987	.6957	.6913	.6913	.6870				
12	.6869	.6854	.6767	.6767	.6767				
16	.6641	.6512	.6469	.6555	.6569				
✓20	.5982	.6184	.6198	.6328	.6400				
23	.5631	.5922	.5951	.6097	.6126				
00	.6990	.6960	.6917	.6931	.6902	-125	000	5	3
04	.7029	.6971	.6941	.6941	.6912				
08	.6975	.6960	.6917	.6931	.6902				
12	.6888	.6902	.6844	.6844	.6815				
16	.6738	.6796	.6592	.6621	.6650				
20	.5922	.6170	.6170	.6301	.6330				
23	.5526	.5818	.5847	.5993	.6052				
00	.7000	.6971	.6912	.6941	.6912	-130	000	5	3
04	.7014	.6955	.6926	.6955	.6926				
08	.7000	.6971	.6941	.6956	.6956				
12	.6912	.6941	.6898	.6941	.6883				
16	.6796	.6888	.6815	.6830	.6742				
20	.6670	.6699	.6597	.6349	.6393				
23	.5868	.5722	.5780	.5926	.5985				
00	.6976	.6947	.6917	.6932	.6917	-135	000	5	3
04	.7005	.6976	.6947	.6961	.6976				
08	.7011	.6996	.6996	.7040	.6996				
12	.6992	.7006	.6948	.6977	.6948				
16	.6903	.6933	.6859	.6903	.6874				
20	.6631	.6762	.6762	.6762	.6718				
23	.6202	.6465	.6480	.6524	.6085				
00	.7055	.6996	.6938	.6996	.6967	-150	000	5	3
04	.7070	.7070	.7011	.7041	.7011				
08	.7123	.7065	.7036	.7065	.7036				
12	.7066	.7066	.7007	.7051	.7051				
16	.6982	.6997	.6982	.7026	.6997				
20	.6645	.6777	.6748	.6836	.6850				
23	.6220	.6425	.6455	.6572	.6601				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$

$P_t/P_{t,0}$				ϕ_R	ϕ	Rake	Run
α_1	3.069	3.269	3.469				
00	.6849	.6776	.6835	030	000	5	1
04	.6932	.6990	.7092				
08	.7103	.7249	.7380				
12	.7420	.7508	.7610				
16	.7730	.7818	.7891				
20	.7094	.7079	.7094				
23	.7045	.7030	.7045				
00	.6878	.6820	.6892	015	000	5	1
04	.6990	.7078	.7180				
08	.7261	.7362	.7449				
12	.7557	.7659	.7746				
16	.7856	.7958	.7130				
20	.7091	.7106	.7106				
23	.7032	.7047	.7061				
00	.6854	.6810	.6897	000	000	5	1
04	.6985	.7073	.7174				
08	.7294	.7395	.7497				
12	.7582	.7684	.7786				
16	.7890	.7430	.7125				
20	.7067	.7081	.7067				
23	.6994	.7023	.7037				
00	.6830	.6757	.6815	-015	000	5	1
04	.6955	.7028	.7115				
08	.7226	.7328	.7415				
12	.7526	.7627	.7714				
16	.7804	.7920	.7106				
20	.6994	.7023	.7037				
23	.6931	.6975	.6990				
00	.6859	.6800	.6873	-030	000	5	1
04	.6971	.7029	.7131				
08	.7212	.7299	.7386				
12	.7455	.7557	.7659				
16	.7682	.7798	.7885				
20	.7906	.7019	.7048				
23	.6888	.6931	.6960				
00	.6888	.6830	.6902	-040	000	5	1
04	.6966	.7009	.7111				
08	.7155	.7257	.7344				
12	.7373	.7475	.7577				
16	.7571	.7702	.7789				
20	.7786	.7903	.7014				
23	.7068	.6908	.6922				
00	.6888	.6830	.6903	-045	000	5	1
04	.6961	.6990	.7092				
08	.7121	.7223	.7311				
12	.7311	.7413	.7530				
16	.7515	.7632	.7734				
20	.7699	.7815	.7903				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_o = 2.00$

$P_t'/P_{t,o}$							
$\alpha_1 \backslash \gamma$	3.069	3.269	3.469	α_R	β	$\frac{P_{t,o}}{P_{t,o}}$	$\frac{P_{t,o}}{P_{t,o}}$
23	.7815	.6898	.6912				
00	.6862	.6804	.6877	-050	000	5	2
04	.6929	.6958	.7060				
08	.7095	.7182	.7284				
12	.7265	.7367	.7483				
16	.7460	.7547	.7634				
20	.7677	.7749	.7836				
23	.7793	.7822	.6870				
00	.6881	.6823	.6895	-055	000	5	2
04	.6968	.6982	.7069				
08	.7090	.7149	.7265				
12	.7251	.7323	.7425				
16	.7440	.7498	.7600				
20	.7629	.7658	.7745				
23	.7748	.7777	.7821				
00	.6911	.6853	.6926	-060	000	5	2
04	.6930	.6960	.7047				
08	.7072	.7115	.7232				
12	.7221	.7265	.7367				
16	.7398	.7441	.7543				
20	.7593	.7622	.7666				
23	.7709	.7739	.7724				
00	.6887	.6829	.6901	-065	000	5	2
04	.6941	.6941	.7043				
08	.7058	.7073	.7175				
12	.7193	.7208	.7296				
16	.7365	.7379	.7423				
20	.7531	.7560	.7560				
23	.7616	.7660	.7660				
00	.6877	.6834	.6921	-070	000	5	2
04	.6941	.6941	.7029				
08	.7048	.7048	.7150				
12	.7171	.7185	.7244				
16	.7321	.7335	.7335				
20	.7443	.7472	.7487				
23	.7531	.7560	.7575				
00	.6906	.6848	.6935	-075	000	5	2
04	.6959	.6930	.7017				
08	.7032	.7032	.7090				
12	.7142	.7157	.7157				
16	.7256	.7285	.7299				
20	.7363	.7392	.7407				
23	.7436	.7480	.7480				
00	.6926	.6882	.6955	-080	000	5	2
04	.6960	.6902	.6989				
08	.7003	.7003	.7032				
12	.7111	.7140	.7140				

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_\infty = 2.00$

$P_t/P_{t,0}$							
$\alpha_1 \backslash \gamma$	3.059	3.269	3.469	β_R	β	Take	Run
16	.7196	.7225	.7225				
20	.7260	.7303	.7318				
23	.7327	.7356	.7356				
00	.6925	.6867	.6940	-085	000	5	2
04	.6954	.6896	.6969				
08	.7002	.7002	.7002				
12	.7046	.7075	.7075				
16	.7109	.7138	.7167				
20	.7162	.7191	.7206				
23	.7191	.7235	.7235				
00	.6940	.6882	.6969	-090	000	5	2
04	.6964	.6906	.6949				
08	.6984	.6969	.6954				
12	.7012	.7041	.7041				
16	.7046	.7075	.7090				
20	.7056	.7085	.7114				
23	.7075	.7104	.7104				
00	.6930	.6872	.6930	-095	000	5	2
04	.6940	.6882	.6911				
08	.6969	.6969	.6940				
12	.6974	.6989	.6989				
16	.6960	.7003	.7018				
20	.6945	.6974	.6974				
23	.6926	.6970	.6970				
00	.6944	.6870	.6914	-100	000	5	3
00	.6934	.6861	.6920				
04	.6944	.6885	.6885				
08	.6944	.6930	.6915				
12	.6944	.6973	.6973				
16	.6893	.6937	.6952				
16	.6903	.6933	.6962				
20	.6860	.6889	.6904				
23	.6811	.6840	.6840				
00	.6933	.6874	.6918	-105	000	5	3
04	.6933	.6845	.6845				
08	.6889	.6874	.6845				
12	.6849	.6864	.6870				
16	.6801	.6830	.6859				
20	.6709	.6738	.6767				
23	.6630	.6674	.6704				
00	.6913	.6826	.6899	-110	000	5	3
04	.6895	.6851	.6821				
08	.6870	.6855	.6840				
12	.6811	.6841	.6841				
16	.6742	.6772	.6786				
20	.6601	.6645	.6689				
23	.6518	.6591	.6606				
00	.6875	.6816	.6889	-115	000	5	3

APPENDIX B (CONTINUED)

INDICATED TOTAL PRESSURE RATIOS FOR OAL TEST 289-19 $M_0 = 2.00$

$P_t^*/P_{t,0}$							
$\alpha_1 \backslash \gamma$	3.069	3.269	3.469	ϕ_R	ϕ	$\frac{P_{t,0}}{P_{t,0}}$	$\frac{P_{t,0}}{P_{t,0}}$
04	.6885	.6841	.6797				
08	.6864	.6849	.6820				
12	.6816	.6816	.6831				
16	.6699	.6728	.6767				
20	.6587	.6631	.6660				
23	.6411	.6470	.6499				
00	.6860	.6801	.6875	-120	000	5	3
04	.6899	.6826	.6767				
08	.6870	.6840	.6826				
12	.6781	.6796	.6840				
16	.6698	.6741	.6770				
20	.6545	.6588	.6602				
23	.6330	.6373	.6388				
00	.6873	.6815	.6873	-125	000	5	3
04	.6883	.6839	.6752				
08	.6859	.6844	.6859				
12	.6830	.6830	.6830				
16	.6694	.6738	.6738				
20	.6490	.6505	.6519				
23	.6227	.6285	.6329				
00	.6883	.6810	.6869	-130	000	5	3
04	.6897	.6868	.6781				
08	.6927	.6898	.6854				
12	.6898	.6854	.6839				
16	.6713	.6742	.6699				
20	.6451	.6466	.6495				
23	.6159	.6232	.6261				
00	.6888	.6830	.6888	-135	000	5	3
04	.6947	.6888	.6801				
08	.6967	.6923	.6879				
12	.6933	.6889	.6831				
16	.6874	.6757	.6699				
20	.6484	.6499	.6543				
23	.6231	.6231	.6231				
00	.6908	.6850	.6864	-150	000	5	3
04	.6953	.6894	.6806				
08	.7036	.6977	.6918				
12	.7036	.7007	.6948				
16	.7011	.6967	.6953				
20	.6909	.6924	.6894				
23	.6748	.6762	.6762				

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16. Abstract The Bumblebee Program, initiated in 1945 by the U.S. Navy Bureau of Ordinance, was designed to provide a supersonic-guided missile. The Aerodynamic Program included a fundamental research effort in supersonic aerodynamics as well as a design task in developing both vehicles and prototypes of tactical missiles. A series of four reports were prepared in order to facilitate dissemination of a large amount of fundamental aerodynamic missile data, which has been stored for a number of years at the Applied Physics Laboratory. This report provides data that supplements the M = 2.0 flow field data given in Part II. The enclosed data package (Appendix A) describes the Mach number effect by means of pressure fields only, at M = 1.5 and 2.0, and at angles of attack up to 23° at a mid-body station where a wing might be located.					
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